John
Cranford,
M.D.

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MEDICAL
Inquiries and Obſervations:

CONTAINING

AN ACCOUNT

OF THE

Bilious remitting and intermitting

YELLOW FEVER,

AS IT APPEARED IN PHILADELPHIA IN THE YEAR 1794.

TOGETHER WITH

AN INQUIRY

INTO THE

PROXIMATE CAUSE OF FEVER;

AND

A Defence of Blood-letting

AS A

REMEDY

FOR

CERTAIN DISEASES.

By Benjamin Ruſh, M. D.

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THE PREFACE.

It is common in the Preface to Medical books to extol facts, at the expence of theory. Were I diſpoſed to conſider the comparative merit of each of them, I ſhould derive moſt of the evils of medicine from ſuppoſed facts, and aſcribe all the remedies which have been uniformly and extenſively uſeful, to ſuch theories as are true. Facts are combined and rendered uſeful, only by means of theories; and the more diſpoſed men are to reaſon, the more minute and extenſive they become in their obſervations. Under the influence of theſe opinions, I have ventured to deliver, in the following pages, ſome new principles in medicine. I wiſh it had been convenient to have kept them a few years longer from the public eye, in order to have improved them by ſlow and frequent reviſions; but the importunities of

my pupils, added to a ſenſe of the precarious tenure by which I hold a laborious life, have induced me to publiſh them in their preſent conciſe and immature ſtate. If they lead the reader to exerciſe his reaſon in examining them carefully, he will readily ſupply my deficiency of time and ſtudy in preparing them for the preſs. He will reject what is erroneous in them, and apply what is not ſo, to all the diſeaſes of the human body.

The Account of the Yellow Fever, as it appeared in Philadelphia in 1794, will, I hope, be uſeful, by bringing more facts to light upon the ſubject of its origin, and by exhibiting that variety in the ſymptoms and method of cure, which is produced by the difference of ſeaſon in all epidemics.

In ſtating the conduct, and oppoſing the opinions of my medical brethren, I have not been actuated by the leaſt unkindneſs to any one of them. I lament being called to this painful duty, but it muſt be performed by ſomebody, and in this way only can we diſcharge

charge our obligations to thoſe men who, at the expenſe of character and fortune, have put us in the peaceable poſſeſſion of all our knowledge in medicine; for, however ſtrange it may appear, I believe we have not admitted a uſeful medical principle, or remedy of any kind, but what has coſt the authors of them more or leſs conflicts with cotemporary phyſicians.

If the principles contained in this volume ſhould be received with candour, they ſhall be followed (life and health permitting) by an application of them to the cure of the gout, and of the diſeaſes of the mind.

BENJAMIN RUSH.

2d July, 1796.

☞ *The reader is desired to correct the following mistakes:—*

In page 3, line 14 from the top, for *them*, read *the earth*. In line the last of the same page, for *be*, read *become*.

— p. 71, line 12, insert the word *hot*, before *climates*.

— the last line of p. 96, insert *without malignant symptoms*, after the word *intermittent*, and erase the same in the first line of p. 97.

— p. 103, line the 8th from the bottom, insert *though it was performed sparingly towards its close*, after the word *fever*.

— p. 110, line the 3d from the top, instead of *appear to have thrown*, insert *probably threw*. In line 4th, instead of *and*, read *for*. And in lines 8 and 9, instead of *and I think*, read *or perhaps*.

— p. 232, line 14th from the top, instead of *connected with*, read *confined to*.

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AN

ACCOUNT

OF THE

Bilious remitting and intermitting YELLOW FEVER,

AS IT *APPEARED* IN

PHILADELPHIA,

IN THE YEAR 1794.

UNIVERSITY OF MARYLAND
SCHOOL OF MEDICINE

AN

ACCOUNT, &c.

I CONCLUDED the Hiſtory of the ſymptoms of the Bilious Remitting Yellow Fever as it appeared in Philadelphia in the year 1793, by taking notice that the diſeaſes which ſucceeded that fatal epidemic, were all of a highly inflammatory nature.

I have formerly deſcribed the weather and diſeaſes of the months of March and April in the ſpring of 1794.

The weather during the firſt three weeks of the month of May was dry and temperate, with now and then a cold day and night. The ſtrawberries were ripe on the 15th, and cherries on the 22d day of the month in ſeveral of the city gardens.

A ſhower of hail fell on the afternoon of the 22d, which broke the glaſs windows of many houſes. A ſingle ſtone of this hail was found to weigh two drachms. Several people collected a quantity of it, and preſerved it till the next day in their cellars, when they uſed it for the purpoſe of cooling their wine. The weather after this hail ſtorm was rainy during the remaining part of the month. The diſeaſes were ſtill inflammatory. Many perſons were afflicted with a ſore mouth in this month.

The weather in June was pleaſant and temperate. Several intermittents, and two very acute pleuriſies occurred in my practice during this month. The intermittents were uncommonly obſtinate, and would not yield to the largeſt doſes of the bark.

In a ſon of Mr. Samuel Coates of ſeven years old, the bark produced a ſudden tranſlation of this ſtate of fever to the head, where it produced all the ſymptoms of the firſt ſtage of internal dropſy of the brain. This once formidable diſorder yielded in this caſe to three bleedings, and other depleting medicines. The blood drawn in every inſtance was ſizy.

From the inflammatory complexion of the diſeaſes of the ſpring, and of the beginning of June, I expected

I expected the fevers of the ſummer and autumn would be of a violent and malignant nature. I was the more diſpoſed to entertain this opinion from obſerving the ſtagnating filth of the gutters of our city; for the citizens of Philadelphia having an intereſt in rejecting the proofs of the generation of the epidemic of 1793 in their city, had neglected to introduce the regulations which were neceſſary to prevent the production of a ſimilar fever from domeſtic putrefaction. They had, it is true, taken pains to remove the earth and offal matters which accumulated in the ſtreets; but theſe, from their being always dry, were inoffenſive as remote cauſes of diſeaſe. Perhaps the removal of them did harm, by preventing the abſorption of the miaſmata which were conſtantly exhaled from the gutters.

On the 6th of June Dr. Phyſick called upon me, and informed me that he had a woman in the yellow fever under his care. The information did not ſurpriſe me, but it awakened ſuddenly in my mind the moſt diſtreſſing emotions. I adviſed him to inform the mayor of the city of the caſe, but by no means to make it more public, for I hoped that it might be a ſporadic inſtance of the diſorder, and that it might not be general in the city.

On the 12th of the month my fears of the return of the yellow fever were revived by visiting Mr. Isaac Morris, whom I found very ill with a violent puking, great pain in his head, a red eye, and a slow tense pulse. I ordered him to be bled, and purged him plentifully with jalap and calomel. His blood had that appearance which has been compared by authors to the washings of raw flesh in water. Upon his recovery he told me that he "suspected he had had the yellow fever, for that his feelings were exactly such as they had been in the fall of 1793, at which time he had an attack of that disorder."

On the 14th of June I was sent for in the absence of Dr. Mease, to visit his sister in a fever. Her mother who had become intimately acquainted with the yellow fever by nursing her son and mother in it, the year before, at once decided upon the name of her daughter's disorder. Her symptoms were violent, but they appeared in an intermitting form. Each paroxysm of her fever was like a hurricane to her whole system. It excited apprehensions of immediate dissolution in the minds of all her friends. The loss of sixty ounces of blood by five bleedings, copious doses of calomel and jalap, and a large blister to her neck, soon vanquished this malignant intermittent

termittent, without the aid of a ſingle doſe of bark.

During the remaining part of the month I was called to ſeveral caſes of fever which had ſymptoms of malignity of a ſuſpicious nature. The ſon of Mr. Andrew Brown had an hæmorrhage from his noſe in a fever, and a caſe of menorrhagia occurred in a woman who was affected with but a ſlight degree of fever.

In the courſe of this month I met with ſeveral caſes of ſwelled teſticles, which had ſucceeded fevers ſo ſlight as to have required no medical aid. Dr. Deſportes records ſimilar inſtances of a ſwelling in the teſticles which appeared during the prevalence of the yellow fever in St. Domingo in the year 1741. *

In the month of July I viſited James Lefferty and William Adams, both of whom had, with the uſual ſymptoms of yellow fever, a yellow colour on their ſkin. I likewiſe attended three women, in whom I diſcovered the diſeaſe under forms in which I had often ſeen it in the year 1793. In two of them it appeared with ſymptoms of a violent colic, which

* Hiſtoire des Maladies de Saint Domingue, p. 112.

yielded only to frequent bleedings. In the third, it appeared with ſymptoms of pleuriſy, which was attended with a conſtant hæmorrhage from the uterus, although blood was drawn almoſt daily from her arm for ſix or ſeven days. About the middle of this month many people complained of a ſickneſs at ſtomach, which in ſome caſes produced a puking, without any ſymptoms of fever.

During the month of Auguſt, I was called to Peter Denham, Mrs. Bruce, a ſon of Jacob Gribble's, Mr. Cole, John Madge, Mrs. Gardiner, Miſs Purdon, Mrs. Gavin, and Benjamin Cochran, each of whom had all the uſual ſymptoms of the yellow fever. I found Mr. Cochran ſitting on the ſide of his bed, with a pot in his hand, into which he was diſcharging black bile from his ſtomach, on the 6th day of the diſorder. He died on the next day. Mrs. Gavin died on the 6th day of her diſorder, from a want of ſufficient bleeding, to which ſhe objected from the influence of her friends. Beſides the above perſons, I viſited Mr. George Eyre at Kenſington, Mr. Thomas Fitzſimons, and Thomas M'Kean, jun. ſon of the chief juſtice of Pennſylvania, all of whom had the diſorder, but in a moderate degree. From none of them had I as yet obſerved the fever to be propagated by contagion, and therefore I took no ſteps to alarm my fellow-citizens

citizens with the unwelcome news of its being in town. But my mind was not eaſy in this ſituation, for I daily heard of perſons who died of the diſorder, who might probably have been ſaved had they applied early for relief, or had a ſuſpicion become general among all our phyſicians of the exiſtence of the yellow fever in the city. The colera infantum was common during this, and part of the preceding month. It was more obſtinate and more fatal than in common years.

On the 12th of this month a letter from Baltimore announced the exiſtence of the yellow fever in that city. One of the patients whom I viſited in this month, in the fever, Mr. Cole, brought the contagion of it in his body from that place.

On the 25th of the month two members of a committee lately appointed by the government of the ſtate, for taking care of the health of the city, called upon me to know whether the yellow fever was in town. I told them it was, and mentioned ſome of the caſes that had come under my notice; but informed them at the ſame time, that I had ſeen no caſe in which it had been contagious, and that in every caſe where I had been called early, and where my preſcriptions had been followed, the diſeaſe had yielded to medicine.

On the 29th of the month, I received an invitation to attend a meeting of the Committee of Health, at their office in Walnut Street. They interrogated me respecting the intelligence I had given to two of their members on the 25th. I repeated it to them, and mentioned the names of all the persons I had attended in the yellow fever since the 9th of June.

As I considered the filth of the gutters, and the stagnating water in the neighbourhood of the city to be the remote causes of this fever, I advised the Committee to have them both removed, and thereby to prevent the spreading of the disorder.

On the first week in September the disease appeared to be contagious in several families, and the number of my patients was thereby daily multiplied. I now considered it as criminal to conceal any longer the prevalence of the disease in our city, or to elude the inquiries that were directed to me by my fellow-citizens, respecting it. In vain did I wait for the alarm to come from another quarter. I recollected the slanders to which I had exposed myself the year before, by giving the first notice of the prevalence of the fever in our city. But I did not hesitate in this situation, to offer up my reputation a second time as a sacrifice for the lives of my fellow

fellow-citizens. In order to render the information as public as possible, I addressed a letter to the mayor of the city on the 2d of September, in which I stated the existence, and contagious nature of the disease. The contents of this letter, and my information to the Committee of Health respecting the yellow fever, drew upon me the following attack in Mr. Fenno's newspaper.

For the Gazette of the United States.

"MR. FENNO,

"I BEG leave, through the channel of your paper, to enquire of the physician who reported to the inspectors of health last Friday, that "the yellow fever had again made its appearance in this city, but that it was not at present contagious," what could have induced him to make such a report? No benefit can arise to the public from a knowledge of such a fact, admitting it to be as stated; but a great deal of damage: because such reports cannot fail of alarming and filling with dread, the minds of those who are not possessed of the Doctor's fine discernment and capacity of splitting diseases into grades, sub-grades, and semi-grades; therefore such a report will not only render multitudes uneasy, and interrupt the usual course of

of buſineſs, but injure the intereſt and reputation of the city in ſeveral other reſpects.

" If the diſeaſe really exiſted, it would be commendable to ſound the alarm—it would be criminal to be ſilent; but if it is not in the city, or if being in the city, it is not contagious, it is the height of cruelty to create uſeleſs terror and alarm in the minds of the citizens.

" But Mr. Fenno, is it not very extraordinary, if the diſeaſe is in the city, and the phyſician alluded to has had twenty-ſix caſes of it ſince June, that it has appeared to none of the other phyſicians, not even to thoſe who attend the Diſpenſary, which I am aſſured from the beſt authority is the caſe?

" A phyſician who has great weight with the credulous and ignorant, has already attempted to ruin the reputation of this flouriſhing and delightful city, by publiſhing an opinion that the late peſtilential fever was generated in it; and that its ſituation and climate is favourable to the generation of the moſt malignant maladies. If ſuch an opinion was not believed by every man who knows the character of that phyſician to be a mere invention to ſupport a miſtaken theory, or that it proceeded from

from a rage for being eſteemed the moſt learned man in the univerſe; the author would in a few years have the divine ſatisfaction of ſeeing this populous and proſperous city deſerted by all its opulent inhabitants, and become a ſolitary waſte where he might ſit alone, 'ſmiling ghaſtly o'er its ruins, and enjoying the fruits of his ſingular opinion.'

"If the opinion of that phyſician was founded in fact, Mr. Fenno, ſuch would be the bleſſed conſequence; for who that has any regard for health or life would venture to remain in a city notorious for generating plagues which put life in perpetual jeopardy?

"This, however, fortunately is not credited, and the city, in ſpite of the reveries of philoſophers, phyſicians, and conjurers, will flouriſh for ages yet to come; and when all the ſources of ſtagnant water in its ſuburbs come to be removed or corrected, it will be one of the moſt healthy ſituations in America. Open on every ſide to the acceſs of the winds—with a dry ſoil—ſtreets favourably arranged—the inhabitants induſtrious, cleanly, and well informed—it cannot in the nature of things be unhealthy. Compare its bills of mortality with thoſe of Paris, London, Edinburgh, Vienna, or Stockholm,

holm, and you will at once be convinced how much more healthful it is than either of thoſe.

" Be under no concern my fellow-citizens, the yellow fever is not in our city, nor is it poſſible for it to be generated in it, in its preſent ſituation.

WALTER QUŒRIST."

On the 13th of September I wrote a ſecond letter to the Committee of Health, in which I declared the diſeaſe to be contagious, and urged them to make the information I gave them public. My reaſons for this advice were ſtated in the following words: " It will excite the citizens to apply early for medical aid, and it will produce in the minds of ſuch of the phyſicians as are unprejudiced, an early ſuſpicion of the preſence of the diſeaſe, in thoſe caſes where it comes on with its leſs obvious ſymptoms."

None of theſe communications produced the effect that was intended by them. Dr. Phyſick and Dr. Dewees ſupported me in my declaration, but their teſtimony did not protect me from the groſſeſt calumnies of my fellow-citizens. One of my friends informed me that he had heard a propoſal in a public

public company to "drum me out of the city." A charge of insanity which had been made against me the year before, was now revived, and propagated with so much confidence, that one of my patients who had believed it, expressed her surprise at perceiving no deviation from my ordinary manner, in a sick-room. Several of the physicians of the city united in the slanders which were thrown out against me; and notwithstanding they daily attended, or lost patients in the yellow fever, they denied that any cases of it had occurred in their practice. To these cases they gave other names. I shall briefly enumerate these names, together with the opinions of some of the physicians respecting the fever. This detail will be useful; for by exposing the danger and fatal consequences of error and deception, we shall prevent their being repeated, and thereby prepare the way for the more ready and universal admission of truth, upon the subject of the fever. Thus ignorance and vice will appear, even in the science of medicine, not to have existed in vain.

It was called,

1. A common intermittent. 2. A bilious fever. 3. An inflammatory remitting fever. 4. A putrid fever. 5. A nervous fever. 6. A dropsy of the brain.

brain. 7. A lethargy. 8. Pleuriſy. 9. Gout. 10. Rheumatiſm. 11. Colic. 12. Dyſentery. And 13. Sore throat. *

It was ſaid further, not to be the yellow fever becauſe it was not contagious, and becauſe ſome who had died of it, had not a ſighing in the beginning, and a black vomiting in the cloſe of the diſeaſe. Even where the black vomiting and yellow ſkin occurred, they were ſaid not to conſtitute a yellow fever, for that thoſe ſymptoms occurred in other fevers.

A further detail of the names of this fever, and of the opinions of the phyſicians will appear preſently in their report to the Committee of Health on the 30th of September.

Truth, it has often been ſaid, is an unit, but this is not the caſe with error. While the phyſicians who aſſerted that the yellow fever was in town, agreed in fixing the ſame name to every caſe of it, the phyſicians who propagated the contrary opinion, gave different names to the ſame fever.

* A ſore throat ſometimes occurs as a ſymptom of the yellow fever. It is taken notice of by Dr. Blane in his Hiſtory of the Fever in the Weſt Indies.

In

In one inſtance a citizen of Philadelphia was ſaid by one of his phyſicians to have died of a lethargy, and by another, of a nervous fever. To keep up the latter idea, his death was announced in the public papers, to have occurred after an illneſs of two weeks.

I hope to ſhew hereafter, that it is not more improper to ſay that men are of different ſpecies, becauſe they are tall and ſhort, or becauſe ſome are long, and others ſhort lived, than that fevers are of different ſpecies, becauſe they vary in their ſymptoms and duration.

The conduct of the Committee of Health was not leſs improper that that of the phyſicians. They not only refuſed to make the exiſtence of the fever in the city public, but refuſed to open Buſh-hill hoſpital for the reception of the poor, although that convenient and ſpacious building had been hired by the city for that purpoſe, and ſent ſeveral poor perſons to the hoſpital at State Iſland. This ſituation was preferred to Buſh-hill, to prevent the citizens being alarmed, and probably to favour the opinion that the diſeaſe was imported. About the ſame time they ſent invitations to all the phyſicians in the city (Dr. Phyſick, Dr. Dewees, and one more excepted) to attend a meeting of the Board, at the

the City Hall, in order to aſcertain the ſtate of the city. The following publication was the reſult of that meeting.

HEALTH-OFFICE,

Port of Philadelphia, 1ſt October, 1794.

"THE Board of Health, feeling, in common with the reſt of their fellow-citizens, a concern for the intereſt and ſafety of the city, were induced to make a general invitation to the Faculty, to meet them at the City Hall, on Tueſday the 30th September, in order that from their communications a juſt ſtate of the health of the city might be obtained. Accordingly, the following phyſicians were pleaſed to attend, *viz.*

Dr. Samuel Duffield,	Dr. Kuhn,
Dr. Parke,	Dr. Hodge,
Dr. Dunlap,	Dr. Currie,
Dr. Wiſtar,	Dr. Benj. Duffield.
Dr. Porter,	and
Dr. Annan,	Dr. Woodhouſe.

"From the whole of theſe gentlemen, to the queſtion of a contagious diſeaſe (that is, a diſeaſe which had been communicated from one perſon to another) exiſting at this time, there were anſwers in the negative.

"It was then propoſed that caſes of autumnal fevers, which were conſidered dangerous *to the patients*, ſhould be mentioned. To this

"Dr. Currie anſwered, that an aged female in a remittent fever, and a boy in the yellow fever, were the only caſes apparently dangerous under his care.

"Dr. Benjamin Duffield has two caſes of autumnal remittent fevers, dangerous, without any contagion annexed to it.

"Dr. Parke has one caſe, conſidered dangerous.

"Dr. Wiſtar. One caſe that may be dangerous.

"Dr. Hodge. Five caſes that probably will become putrid and dangerous.

"Dr. Barton, though not preſent, communicated through a member of the Board, that he has no caſe of a contagious nature.

"Drs. Ruſh and Say, not being preſent, were ſo obliging as to make their communications in writing, which are hereto ſubjoined.—From

" Dr. Ruſh. ' Out of about thirty patients whom I viſit daily, who are confined by bilious remitting and intermitting fevers, twelve of them have fevers of the higheſt or moſt inflammatory degree, commonly called yellow fevers. All of them are tending to a favourable iſſue, and from the mode in which they have been treated, I hope no contagion will be generated by them.'

" From Dr. Say. ' Within the compaſs of my practice there are a number of people labouring under remitting and intermitting fevers: I have had, I have no doubt, ſeveral caſes within the ten days paſt, of the malignant fever, though at preſent I do not know that I have a decided caſe of that kind.'

" The Board of Health, in addition to the foregoing remark, that they are not acquainted with any caſes of a dangerous nature, other than has been already ſtated—and upon the whole, cannot but felicitate their fellow-citizens, at a time when alarms and injurious reports have been induſtriouſly circulated to the prejudice of the health of the city, that amongſt the practice of ſuch a number of phyſicians, there is not one caſe of a contagious nature apparent, and ſo very few who are dangerouſly ill.

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"The board further have the pleaſure to inform the citizens that although the houſe at Buſh-Hill was prepared for the reception of ſuch ſick perſons as were proper objects for that place on the 26th of laſt month, there is not now, nor has there been a ſingle patient there.

"By order, and on behalf of the Board of Health.

JACOB MORGAN, Chairman."

"☞ *The citizens are requeſted to meet this evening at* 6 *o'clock, at the City Hall, to take into conſideration the alarming accounts of the progreſs of a contagious diſorder at Baltimore, and to deviſe proper meaſures to protect the citizens from the effects thereof.*"

The reader will pleaſe to take notice, that the queſtion by the Committee, was whether "a *contagious* diſeaſe exiſted at *this time* in the city." Why was not an inquiry made whether the *yellow* fever exiſted at that time in the city? or, Why was that fever deſignated by its being contagious, a character which by no means belongs to it univerſally, and that does not conſtitute its principal danger; for it is well known that in the Weſt Indies, it affects ſo ſeldom by contagion, as to furniſh a controverſy among Weſt Indian phyſicians, con-

cerning its contagious nature? Even in the city of Philadelphia, it was not uniformly contagious in 1793, many having escaped it who were constantly exposed to its contagion. But further. Why, was there no retrospect in the inquiry into the state of the city, during the weeks or months that had preceded the 30th of September? Two of the physicians who asserted that they *then* had no cases of yellow fever under their care, had acknowledged that they had had several cases of it a few weeks before. It is impossible to review this report, without blushing for the shameful submission made by the science of medicine, to the commercial spirit of the city.

But let not the reader complain of the physicians and citizens of Philadelphia alone. A similar conduct has existed in all cities, upon the appearance of great and mortal epidemics.

It prevailed lately in Algiers, where the Dey refused to let some American prisoners leave a town infected by the plague, denying the existence of the disorder in that place.* Successive attempts by numerous publications, were made to conceal the prevalence of the yellow fever in the cities of New

* See Col. Humphries's letter to the citizens of the United States, dated Lisbon, July 11, 1794.

York,

York, Baltimore and Charleſton, for two years paſt. Such was this ſelfiſh diſpoſition in the Committee of Health in New York in the year 1795, that they wrote to the Committee of Health in Philadelphia, to deliver up the names of ſeveral perſons who had in private letters to their friends, which had been publiſhed, aſſerted that the yellow fever prevailed in that city. But the contracted ſpirit of this Committee did not end here. After they were compelled to acknowledge the prevalence of the fever among them, they endeavoured to compoſe the fears of their fellow citizens, by informing them, that a "large proportion of the deaths hitherto reported, had fallen among emigrants lately from Europe, ſtrangers, and other tranſient perſons,"† thereby intimating, that the obligations to ſympathy ſhould be confined wholly to permanent and wealthy citizens.

Nor is it any thing new for mortal diſeaſes to receive mild and harmleſs names from phyſicians. The plague was called a ſpotted fever for ſeveral months, by ſome of the phyſicians of London in the year 1665.

† Report of the Committee of Health of New York, dated Friday evening, September 18, 1795.

Added to that ſervility to wealth, which diſpoſes phyſicians to deny the exiſtence of peſtilential fevers in cities, there were two other reaſons which led ſome of the phyſicians of Philadelphia, to deny the prevalence of the yellow fever in our city; theſe reaſons were; firſt, The change which they had made in their practice, for they had adopted the depleting ſyſtem in a certain degree; but they declared that they uſed it not in the yellow fever, but in an inflammatory bilious remittent; and ſecondly, Their inability to derive the diſeaſe from importation. To have acknowledged the exiſtence of the diſeaſe in our city, therefore, would have been a direliction of two of the principal errors held by them in the year 1793.

Thus while nurſes, bleeders, clergymen and occaſional viſitors of the ſick, and in ſome inſtances, the ſick themſelves, united in deciding upon the character and name of our fever, a majority of the phyſicians united in perſuading the citizens that it exiſted only in the imaginations of two or three men.

From a review of the conduct of cities upon the ſubject of diſeaſes, an important inference may be made; and that is, to conſider their public reports in favour

favour of the health of their inhabitants, as the precurſors of great and mortal epidemics.

It has been aſked, why I am more anxious to have the exiſtence of the yellow fever believed, than any of the other phyſicians of the city; and why I did not cure it, without calling it by its unpopular name? To this I anſwer, that I conſider the making the diſeaſe public, as ſoon as it appears in a city, and the calling it by its common and vulgar name, to be a duty, indirectly included in that divine precept which forbids the taking away a human life. Dr. Sydenham acknowledges that he generally loſt the firſt four or five patients he met with in a new diſeaſe, and all candid phyſicians muſt confeſs the want of the ſame ſucceſs in the beginning, that they have in the cloſe of a new epidemic. Now this want of ſucceſs may at all times be prevented from becoming general, by notice being given of the exiſtence of a new diſeaſe as ſoon as it makes its appearance. The propagation of the diſeaſe when contagious, may moreover be checked, or its malignity mitigated, by means of diet, or medicine, when its prevalence is generally known, and thereby many thouſand lives may be ſaved. There was once a law in Pennſylvania, which puniſhed the concealment of a malignant and contagious diſeaſe in the city of Philadelphia. Such a law would be a

bleſſing in every country. Whole communities might be ſaved by it.

Notwithſtanding the pains which were taken to diſcredit the report of the exiſtence of the yellow fever in the city, it was finally believed by many citizens, and a number of families in conſequence of it, left the city. And in ſpite of the harmleſs names of intermitting and remitting fever, and the like, which were given to the diſorder, the bodies of perſons who had died with it, were conveyed to the grave in ſeveral inſtances upon a hearſe, the way in which thoſe who died of the yellow fever were buried the year before.

From the influence of occaſional ſhowers of rain, in the months of September and October, the diſeaſe was frequently checked, ſo as to diſappear altogether for two or three days in my circle of practice. It was obſerved that while ſhowers of rain checked it, moiſt or damp weather without rain, favoured its propagation. It was further kept from becoming general by the mode of treating it; for nearly all the phyſicians purged, and bled more or leſs, in every caſe of fever they were called to, by which means the production of a large maſs of contagion, was prevented. This peculiarity in the practice of the oppoſing phyſicians, did not eſcape the notice

of

of ſeveral of the reflecting citizens of Philadelphia, who remarked very properly, that two or three bleedings, and purges of calomel and jalap were not the uſual remedies for intermitting and remitting fevers of common years.

The cold weather in October checked the fever, but it did not baniſh it from the city. It appeared in November, and in all the ſucceeding winter and ſpring months. The weather during theſe months being uncommonly moderate, will account for its not being deſtroyed at the time in which the diſeaſe uſually diſappeared in former years.

The cauſes which prediſpoſed to this fever were the ſame as in the year 1793. Perſons of full habits, ſtrangers, and negroes were moſt ſubject to it. It may ſeem ſtrange to thoſe perſons who have read that the negroes are ſeldom affected with this fever in the Weſt Indies, that they were ſo much affected by it in Philadelphia. There were two reaſons for it. Their manner of living was as plentiful as that of white people in the Weſt Indies, and they generally reſided in alleys and on the ſkirts of the city, where they were more expoſed to noxious exhalation, than in its more open and central parts.

The ſummer fruits, from being eaten before they were ripe, or in too large a quantity, became frequently

quently exciting cauſes of this fever. It was awakened in one of my patients by a ſupper of peaches and milk. Cucumbers in ſeveral inſtances gave vigor to the miaſmata which had been previouſly received into the ſyſtem. Terror excited it in two of my patients. In one of them, a young woman, this terror was produced by hearing, while ſhe ſat at dinner, that a hearſe had paſſed by her door with a perſon on it who had died of the yellow fever. Vexation excited it in a foreign maſter of a veſſel in conſequence of a young woman ſuddenly breaking an engagement to marry him. The diſeaſe terminated fatally in this inſtance.

It was ſometimes unfortunate for patients when the diſeaſe was excited by an article of diet, or by any other cauſe which acted ſuddenly upon the ſyſtem; for it led both them, and in ſome inſtances their phyſicians, to confound thoſe exciting cauſes with its remote cauſe, and to view the diſeaſe without the leaſt relation to the prevailing epidemic. It was from this miſtake that many perſons were ſaid to die of intemperance, of eating ice creams, and of trifling colds, who certainly died of the yellow fever. The rum, the ice creams, and the changes in the air, in all theſe caſes acted like ſparks of fire which ſet in motion the quieſcent particles of tinder or gunpowder.

I ſhall

I ſhall now proceed to deſcribe the ſymptoms which this fever aſſumed during the periods which have been mentioned. This detail will be intereſting to phyſicians who wiſh to ſee how little nature regards the noſological arrangement of authors in the formation of the ſymptoms of diſeaſes, and how much the ſeaſons influence epidemics. A phyſician who had practiced medicine near ſixty years in the city of Philadelphia, declared that he had never ſeen the dyſentery aſſume the ſame ſymptoms in any two *ſucceſſive* years. The ſame may be ſaid probably of nearly all epidemic diſeaſes.

In the arrangement of the ſymptoms of this fever, I ſhall follow the order I adopted in my Account of the Yellow Fever of 1793, and deſcribe them as they appeared in the ſanguiferous ſyſtem—the liver, lungs, and brain—the alimentary canal—the ſecretions and excretions—the nervous ſyſtem—the ſenſes and appetites—upon the ſkin, and in the blood.

Two premonitory ſymptoms ſtruck me this year which I did not obſerve in 1793. One of them was a frequent diſcharge of pale urine for a day or two before the commencement of the fever; the other was ſleep unuſually found, the night before the attack of the fever. The former ſymptom was a precurſor of the plague of Baſſora in the year 1773.

I. I obſerved but few ſymptoms in the ſanguiferous ſyſtem different from what I have mentioned in the fever of the preceding year. The ſlow and intermitting pulſe occurred in many, and a pulſe nearly imperceptible, in three inſtances. It was ſeldom very frequent. In John Madge, an Engliſh farmer who had juſt arrived in our city, it beat only 64 ſtrokes in a minute for ſeveral days, while he was ſo ill as to require three bleedings a-day, and at no time of his fever did his pulſe exceed 96 ſtrokes in a minute. In Miſs Sally Eyre the pulſe at one time was at 176, and at another time it was at 140; but this frequency of pulſe was very rare. In a majority of the caſes which came under my notice, where the danger was great, it ſeldom exceeded 80 ſtrokes in a minute. I have been thus particular in deſcribing the frequency of the pulſe, becauſe cuſtom has created an expectation of that part of the hiſtory of fevers; but my attention was directed chiefly to the different degrees of force in the pulſe as manifeſted by its tenſion, fulneſs, intermiſſions, and inequality of action. The *hobbling* pulſe was common. In John Geraud, I perceived a quick ſtroke to ſucceed every two ſtrokes of an ordinary healthy pulſe. The intermitting and depreſſed pulſe occurred in many caſes. I called it the year before a *ſulky* pulſe. One of my pupils, Mr. Alexander, called it more properly a

locked

locked pulſe. I think I obſerved this ſtate of the pulſe to occur chiefly in perſons in whom the fever came on without a chilly fit.

Hæmorrhages occurred in all the grades of this fever, but leſs frequently in my practice this year than in the year before. It occurred after a ninth bleeding in Miſs Sally Eyre from the noſe and bowels. It occurred from the noſe after a ſixth bleeding in Mrs. Gardiner, who was at that time in the ſixth month of her pregnancy. This ſymptom, which was accompanied by a tenſe and quick pulſe, induced me to repeat the bleeding a ſeventh time. The blood was very ſizy. I mention this fact to eſtabliſh the opinion that hæmorrhages depend upon too much action in the blood-veſſels, and that they are not occaſioned by a diſſolved ſtate of the blood.

There was a diſpoſition at this time to hæmorrhage in perſons who were in apparent good health. A private in a company of volunteers commanded by Major M'Pherſon, informed me that three of his meſſmates were affected by a bleeding at the noſe for ſeveral days after they left the city on their way to quell the inſurrection in the weſtern counties of Pennſylvania.

II. The liver did not exhibit the uſual marks of inflammation. Perhaps my mode of treating the fever

fever prevented thoſe ſymptoms of hepatic affection which belong to the yellow fever in tropical climates. The lungs were frequently affected; and hence the diſeaſe was in many inſtances called a pleuriſy or a catarrh. This inflammation of the lungs occurred in a more eſpecial manner in the winter ſeaſon. It was diſtinguiſhed from the pleuriſies of common years by a red eye; by a vomiting of green or yellow bile; by black ſtools; and by requiring very copious blood-letting to cure it.

The head was affected in this fever, not only with coma and delirium, but with mania. This ſymptom was ſo common as to give riſe to an opinion that madneſs was epidemic in our city. I ſaw no caſe of it which was not connected with other ſymptoms of the bilious remitting fever. The Rev. Mr. Keating, one of the miniſters of the Roman church, informed me that he had been called to viſit ſeven deranged perſons in his congregation in the courſe of one week, in the month of March. Two of them had made attempts upon their lives. This mania was probably, in each of the above caſes, a ſymptom only of general fever. The dilatation of the pupil was univerſal in this fever.

Sore eyes were common during the prevalence of this fever. In Mrs. Leaming this affection of the eyes was attended with a fever of a tertian type.

III. The

III. The alimentary canal ſuffered as uſual in this fever. A vomiting was common upon the firſt attack of the diſorder. I obſerved this ſymptom to be leſs common after the cold and rainy weather which took place about the firſt of October.

I have in another place mentioned the influence of the weather upon the ſymptoms of this diſeaſe. In addition to the facts which have been formerly recorded, I ſhall add one more from Dr. Deſportes. He tells us, that in dry weather the diſeaſe affects the head, and that the bowels in this caſe are more obſtinately coſtive than in moiſt weather. This influence of the atmoſphere on the yellow fever will not ſurpriſe thoſe phyſicians who recollect the remarkable paſſage in Hippocrates in which he ſays, that in the violent heats of ſummer, fevers appeared, but without any ſweat; but if a ſhower, though ever ſo ſlight, appeared, a ſweat broke out in the beginning. * I obſerved further, that a vomiting rarely attended thoſe caſes in which there was an abſence of a chilly fit in the beginning of the fever. The ſame obſervation is made by Dr. Deſportes. †

* Epidemics, Book XI. Sect. 1.
† Les Maladies de St. Domingue, Vol. I. p. 193.

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The matter diſcharged by vomiting was green or yellow bile in moſt caſes. Mrs. Jones, the wife of Captain Lloyd Jones, and one other perſon, diſcharged black bile within one hour after they were attacked by the fever. I have taken notice in the ſecond edition of my Account of the Yellow Fever, that a diſcharge of bile in the beginning of this fever was always a favourable ſymptom. Dr. Davidſon of St. Vincents, in a letter to me, dated the 22d July 1794, makes the ſame remark. It ſhews that the biliary ducts are open, and that the bile is not in that viſcid and inpacted ſtate which is deſcribed in the diſſections of Dr. Mitchel. A diſtreſſing pain in the ſtomach, called by Dr. Cullen gaſtrodynia, attended in two inſtances. A burning pain in the ſtomach, and a ſoreneſs to the touch of its whole external region, occurred in three or four caſes. Two of them were in March 1795. In Mrs. Vogles, who had the fever in September 1794, the ſenſibility of the pit of the ſtomach was ſo exquiſite, that ſhe could not bear the weight of a ſheet upon it.

Pains in the bowels were very common. They formed the true bilious colic, ſo often mentioned by Weſt India writers. In John Madge theſe pains produced a hardneſs and contraction of the whole external region of the bowels. They were perio-

dical in Miſs Nancy Eyre, and in Mrs Gardiner, and in both caſes were attended with diarrhœa.

COSTIVENESS without pain was common, and in ſome caſes ſo extremely obſtinate as to reſiſt for ſeveral days the ſucceſſive and alternated uſe of all the uſual purges of the ſhops.

Flatulency was leſs common in this fever than in the year 1793.

The diſeaſe appeared with ſymptoms of dyſentery in ſeveral caſes.

IV. The following is an account of the ſtate of the SECRETIONS and EXCRETIONS in this fever.

A puking of bile was more common this year, than in year 1793. It was generally, of a green or yellow colour. I have remarked before, that two of my patients diſcharged black bile within an hour after they were affected by the fever, and many diſcharged that kind of matter which has been compared to coffee grounds, towards the cloſe of the diſeaſe.

The fæces were black, in moſt caſes where the ſymptoms of the higheſt grade of the fever attend-

ed. In one very malignant caſe, the moſt draſtic purges brought away by fifty evacuations, nothing but natural ſtools. The purges were continued, and finally black fæces were diſcharged which produced immediate relief. In one perſon, the fæces were of a light colour. In this patient the yellowneſs in the face was of an orange colour, and continued ſo for ſeveral weeks after his recovery.

The urine was in moſt caſes high coloured. It was ſcanty in quantity in Peter Brown, and totally ſuppreſſed in John Madge for two days. I aſcribed this defect of natural action in the kidneys, to an *engorgement* in their blood veſſels, ſimilar to that which takes place in the lungs and brain in this fever. I had for ſome time entertained this idea of a morbid affection of the kidneys, but I have lately been confirmed in it by the account which Dr. Chiſholm gives of the ſtate of one of the kidneys in a man whom he loſt with the Beullam fever at Grenada. "The right kidney (ſays the Doctor) was mortified, although during his illneſs no ſymptom of inflammation of that organ was perceived." * It would ſeem as if the want of action in the kidneys, and a defect in their functions

* Eſſay on the Malignant Peſtilential Fever introduced into the Weſt Indies from Beullam, p. 137.

were

were not neceſſarily attended with pain. I recollect to have met with ſeveral caſes in 1793, in which there was a total abſence of pain in a ſuppreſſion of urine, of ſeveral days' continuance. The ſame obſervation is made by Dr. Chiſholm, in his account of the Beullam fever of Grenada.* From this fact it ſeems probable, that pain is not the effect of any determinate ſtate of animal fibres, but requires the concurrence of morbid, or preternatural excitement to produce it. I met with but one caſe of ſtrangury in this fever. It terminated favourably in a few days. I have never ſeen death in a ſingle inſtance in a fever from any cauſe, where a ſtrangury attended, and I do not recollect ever to have ſeen a fatal iſſue to a fever where this ſymptom was accidentally produced by a bliſter. From this fact there would ſeem to be a connection between a morbid excitement in the neck of the bladder, and the ſafety of more vital parts of the body. The idea of this connection was firſt ſuggeſted to me four-and-twenty years ago, by the late Dr. James Leiper of Maryland, who informed me that he had ſometimes cured the moſt dangerous caſes of pleuriſy after the uſual remedies had failed, by exciting a ſtrangury by means of the tincture of Spaniſh flies, mixed with camphorated ſpirit of wine.

* P. 224.

The tongue was always moiſt in the beginning of the fever, but it was generally of a darker colour than laſt year. When the diſeaſe was left to itſelf, or treated with bark and wine, the tongue became of a fiery red colour or dry and furrowed, as in the typhus fever.

Sweats were more common in the remiſſions of this fever, than they were in the year 1793, but they ſeldom terminated the diſeaſe. During the courſe of the ſweats, I obſerved a deadly coldneſs over the whole body to continue in ſeveral inſtances, but without any danger or inconvenience to the patient. In two of the worſt caſes I attended, there were remiſſions, but no ſweats until the day on which the fever terminated. In ſeveral of my patients the fever wore away without the leaſt moiſture on the ſkin. The *milk* in one caſe was of a greeniſh colour, ſuch as ſometimes appears in the ſerum of the blood. In another female patient who gave ſuck, there was no diminution in the quantity of her milk during the whole time of her fever, nor did her infant ſuffer the leaſt injury from ſucking her breaſts.

I obſerved tears to flow from the eye of a young woman in this fever, at a time when her mind ſeemed free from diſtreſs of every kind.

V. I pro-

V. I proceed next to mention the ſymptoms of this fever in the nervous ſyſtem.

Delirium was leſs common than laſt year. I was much ſtruck in obſerving John Madge, who had retained his reaſon while he was ſo ill as to require three bleedings a day, to become delirious as ſoon as he began to recover, at which time his pulſe roſe from between 60, and 70 to 96 ſtrokes in a minute. I ſaw one caſe of extreme danger in which an hyſterical laughing and weeping alternately attended.

I have before mentioned the frequency of mania as a ſymptom of this diſeaſe. An obſtinate wakefulneſs attended the convaleſcence from this fever in Peter Brown, John Madge, and Mr. Cole.

Fainting was more common in this fever than in the fever of 1793. It uſhered in the diſeaſe in one of my patients, and it occurred in ſeveral inſtances after bleeding, where the quantity of blood drawn was very moderate.

Several people complained of giddineſs in the firſt attact of the fever, before they were confined to their beds. Sighing was leſs common, but a hiccup was more ſo, than in the year before.

John Madge had an immobility in his limbs bordering upon palſy. A weakneſs in the wriſts in one caſe ſucceeded a violent attack of the fever.

Peter Brown complained of a moſt acute pain in the muſcles of one of his legs. It afterwards became ſo much inflamed as to require external applications to prevent the inflammation terminating in an abſceſs. Mrs. Mitchell complained of ſevere cramps in her legs.

The ſenſations of pain in this fever were often expreſſed in extravagant language. The pain in the head in a particular manner was compared to repeated ſtrokes of a hammer upon the brain, and in two caſes in which this pain was accompanied by great heat, it was compared to the boiling of a pot.

The more the pains were confined to the bones and back, the leſs danger was to be apprehended from the diſeaſe. I ſaw no caſe of death from the yellow fever in 1793, where the patient complained much of pain in the back. It is eaſy to conceive how this external determination of morbid action, ſhould preſerve more vital parts. The bilious fever of 1780 was a harmleſs diſeaſe, only becauſe it ſpent its whole force chiefly upon the limbs. This

was

was so generally the case, that it acquired from the pains in the bones which accompanied it, the name of the "break bone fever." Hippocrates has remarked that pains which descend, in a fever, are more favourable than those which ascend.* This is probably true, but, I did not observe any such peculiarity in the translation of pain in this fever. The following fact from Dr. Grainger will add weight to the above observations. He observed the pains in a malignant fever which were diffused through the whole head, though excruciating, were much less dangerous, than when they were confined to the temples, or forehead.†

I saw two cases in which a locked jaw attended. In one of them it occurred only during one paroxysm of the fever. In both it yielded in half an hour to blood-letting. I met with one case in which there was universal tetanus. I should have suspected this to have been the primary disease, had not two persons been infected by the patient thus disordered, with the yellow fever.

The countenance sometimes put on a ghastly appearance in the height of a paroxysm of the fever.

* Epidemics, book II. section 2.

† Historia febris anomalæ Batavæ Annorum 1746, 1747, 1748, cap. I.

The face of a lady admired when in health for uncommon beauty, was ſo much diſtorted by the commotions of her whole ſyſtem in a fit of the fever, as to be viewed with horror by all her friends.

VI. The ſenſes and appetites were affected in this fever in the following manner.

A total blindneſs occurred in two perſons during the exacerbation of the fever, and ceaſed during its remiſſions.—A great intolerance of light occurred in ſeveral caſes. It was moſt obſervable in John Madge during his convaleſcence.

A foreneſs in the ſenſe of touch, was ſo exquiſite in Mrs Kapper about the criſis of her fever, that the preſſure of a piece of fine muſlin upon her ſkin gave her pain.

Peter Brown with great heat in his ſkin, and a quick pulſe, had no thirſt, but a moſt intenſe degree of thirſt was very common in this fever. It produced the ſame extravagance of expreſſion that I formerly ſaid was produced by pain. One of my patients Mr. Cole ſaid he "could drink up the ocean." I did not obſerve thirſt to be connected with any peculiar ſtate of the pulſe.

George

George Eyre and Henry Clymer, had an unuſual degree of appetite juſt before the uſual time of the return of a paroxyſm of fever.

A young man complained to me of being afflicted with nocturnal emiſſions of ſeed during his convaleſcence. This ſymptom is not a new one in malignant fevers. Hippocrates takes notice of it.* I met with one inſtance of it among the ſporadic caſes of yellow fever which occurred in 1793. It ſometimes occurs according to Lomius in the commotions of the whole ſyſtem which take place in epilepſy.

VII. The diſeaſe made an impreſſion upon the lymphatic ſyſtem. Four of my patients had glandular ſwellings: two of them were in the groin; a third was in the parotid; and the fourth was in the maxillary glands. Two of theſe ſwellings ſuppurated.

VIII. The yellowneſs of the ſkin which ſometimes attends this fever, was more univerſal, but more faint than in the year 1793. It was in many caſes compoſed of ſuch a mixture of colours as to reſemble poliſhed mahogany. But in a few caſes, the yellowneſs was of a deep orange colour. The former went off with the fever, but the latter often continued for ſeveral weeks after the patients recovered. In ſome

* Epidemics, book IV.

inſtances

inſtances a red colour predominated to ſuch a degree in the face as to produce an appearance of inflammation.

In Mrs. Vogles a yellowneſs appeared in her eyes during the paroxyſm of her fever, and went off in its remiſſions.

In James Lefferty the yellowneſs affected every part of his body, except his hands, which were as pale as in a common fever.

Peter Brown tinged his ſheets of a yellow colour by night ſweats, many weeks after his recovery.

There was an exudation from the ſoles of the feet of Richard Wells's maid, which tinged a towel of a yellow colour.

In my Account of the Yellow Fever of 1793, I aſcribed the yellow colour of the ſkin wholly to a mixture of bile with the blood. I am ſatisfied that this is the cauſe of it in thoſe caſes where the colour is deep, and endures for ſeveral weeks beyond the criſis of the fever; but where it is tranſitory, and above all, where it is local, or appears only for a few hours during the paroxyſm of the fever, it appears probable that it is connected with the mode

of

of aggregation of the blood, and that it is produced wholly by ſome peculiar action in the blood-veſſels. A ſimilar colour takes place from the bite of certain animals, and from contuſions of the ſkin; in neither of which caſes has a ſuſpicion been entertained of an abſorption or mixture of bile with the blood.

A troubleſome itching, with an eruption of red blotches on the ſkin, attended on the firſt day of the attack of the fever in Mrs. Gardiner.

A roughneſs of the ſkin, and a diſpoſition in it to peel off, appeared about the criſis of the fever in Miſs Sally Eyre.

That ſpecies of eruption which I have elſewhere compared to moſcheto bites, appeared in Mrs. Sellers.

John Ray, a day labourer to whom I was called in the laſt ſtage of the fever, had petechiæ on his breaſt the day before he died.

That burning heat on the ſkin, from which this fever in ſome countries has derived the name of *Cauſus*, was more common this year than laſt. It was ſometimes local, and ſometimes general. I perceived it in an exquiſite degree in the cheeks only of Miſs Sally Eyre, and over the whole body of

of John Ray. It had no connection with the rapidity, or force of the circulation of the blood in the latter inſtance, for it was moſt intenſe at a time when he had no pulſe.

It is remarkable that the heat of the ſkin has no connection with the ſtate of the pulſe. This fact did not eſcape Dr. Chiſholm. He ſays he found the ſkin to be warm while the pulſe was at 52, and that it was ſometimes diſagreeably cold when the pulſe was as quick as in ordinary fever.*

IX. I have in another place rejected putrefaction from the blood as the cauſe or effect of this fever. I ſhall mention the changes which were induced in its appearances when I come to treat of the method of cure.

Having deſcribed the ſymptoms of this fever as they appeared in different parts of the body, I ſhall now add a few obſervations upon its type, or general character.

I ſhall begin this part of the hiſtory of the fever by remarking, that we had but one reigning diſeaſe in town during the autumn and winter; that this was a bilious remitting, or intermitting, and

* P. 117.

ſometimes

ſometimes a yellow fever; and that all the fevers from other remote cauſes than exhalation or contagion, partook more or leſs of the ſymptoms of the prevailing epidemic. As well might we diſtinguiſh the rain which falls in gentle ſhowers in Great Britain, from that which is poured in torrents from the clouds in the Weſt Indies, by different names and qualities, as impoſe ſpecific names and characters upon the different ſtates of bilious fever.

The forms in which this fever appeared were as follow.

1. A tertian fever. Several perſons died of the third fit of tertians who were ſo well as to go abroad on the intermediate day of the fever. It is no new thing for malignant fevers to put on the form of a tertian. Hippocrates long ago remarked, that intermittents ſometimes degenerate into malignant acute diſeaſes; and hence he adviſes phyſicians to be upon their guard on the 5th, 7th, 9th, and even on the 14th day of ſuch fevers. *

2. It appeared moſt frequently in the form of a remittent. The exacerbations occurred moſt commonly in the evening. In ſome there were exacerbations

* De Morb. Popular. L. VII.

in

in the morning as well as in the evening. But I met with ſeveral patients who appeared to be better and worſe half a dozen times in a day. In each of theſe caſes, there were evident remiſſions and exacerbations of the fever.

It aſſumed in ſeveral inſtances the ſymptoms of a colic, and colera morbus. In one caſe the fever, after the colic was cured, ended in a regular intermittent. In another, the colic was accompanied by a hæmorrhage from the noſe. I diſtinguiſhed this bilious colic from that which is excited by lighter cauſes, by its always coming on with more or leſs of a chilline ſs. * The ſymptoms of colic and colera morbus occurred moſt frequently in June and July.

4. It appeared in the form of a dyſentery in a boy of William Corfield, and in a man whom my pupil Mr. Alexander viſited in the neighbourhood of Harrowgate.

5. It appeared in one caſe in the form of an apoplexy.

6. It diſguiſed itſelf in the form of madneſs.

* See Sydenham, Vol. I. p. 212.

7. During the month of November, and in all the winter months, it was accompanied with pains in the ſides and breaſt, conſtituting what noſologiſts call the "pleuritis bilioſa."

8. The puerperile fever was accompanied during the ſummer and autumn, with more violent ſymptoms than uſual. Dr. Phyſick informed me, that two women to whom he was called ſoon after their delivery, died of uterine hæmorrhages; and that he had with difficulty recovered two other lying-in women, who were afflicted with that ſymptom of a malignant diatheſis in the blood-veſſels.

9. Even dropſies partook more or leſs of the inflammatory and bilious character of this fever.

10. It blended itſelf with the ſcarlatina. The blood in this diſorder, and in the puerperile fever, had exactly the ſame appearance that it had in the yellow fever. A yellowneſs in the eyes accompanied the latter diſeaſe in one caſe that came under my notice.

A ſlight ſhivering uſhered in the fever in ſeveral inſtances. But the worſt caſes I ſaw, came on without a chilly fit, or the leaſt ſenſe of coldneſs in any part of the body.

Such

Such was the predominance of the intermitting, remitting, and bilious fever, that the meaſles, the ſmall-pox, and even the gout itſelf, partook more or leſs of its character. There were ſeveral inſtances in which the meaſles, and one, in which the gout appeared with quotidian exacerbations; and two in which madneſs appeared regularly in the form of a tertian.

I mentioned formerly that this fever ſometimes went off with a ſweat, when it appeared in a tertian form. This was always the caſe with the ſecond grade of the fever, but never with the firſt degree of it before the 3d or 4th paroxyſm of the fever; nor did a ſweat occur on the 5th or 7th day, except after the uſe of depleting remedies. This peculiarity in the fever of this year was ſo fixed, that it gave occaſion for my comparing it in my intercourſe with my patients, to a lion on the firſt ſeven days, and to a lamb during the remaining part of its duration.

The fever differed from the fever of the preceding year in an important particular. I ſaw or heard of no caſe which terminated in death on the firſt or third day. In every caſe, the fever came on fraught with paroxyſms. The moderate degrees of it were of ſo chronic a nature as to continue for

ſeveral weeks when left to themſelves. I wiſh this peculiarity in the epidemic which I am now deſcribing, to be remembered; for it will ſerve hereafter to explain the reaſon why a treatment apparently different, ſhould be alike ſucceſsful in different ſeaſons and in different countries.

The criſis of the fever occurred on uneven days more frequently than in the fever of the year 1793.

I remarked formerly * that remiſſions were more common in the yellow fever than in the common bilious fever. The ſame obſervation applies to critical days. They were obſervable in almoſt every caſe in which the diſeaſe was not ſtrangled in its birth. Dr. Chiſholm deſcribes the ſame peculiarity in the Boullam fever. "I have not met with any diſeaſe (ſays the Doctor) in which the periods were more accurately aſcertained." †

The unity of the ſtates of fever of the autumn appeared, not only in the ſameneſs of ſome of their moſt characteriſtic ſymptoms, but in their mutually propagating each other. The moſt malignant ſtates of yellow fever were propagated from a moderate remittent, in a ſervant girl in Mr. Mitchell's family,

* Account of the Yellow Fever of 1793. † P. 141.

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and a moderate remittent was created in two perſons by a man who died of the yellow fever.

In addition to the inſtances formerly enumerated *, of the predominance of powerful epidemics over other diſeaſes, I ſhall add two more, which I have lately met with in the courſe of my reading.

Dr. Chiſholm, in deſcribing the peſtilential fever introduced into the Weſt Indies from Boullam, has the following remarks. "Moſt other diſeaſes degenerated into, or partook very much of this. Dyſenteries ſuddenly ſtopped, and were immediately ſucceeded by the ſymptoms of the peſtilential fever. Catarrhal complaints, ſimple at firſt, ſoon changed their nature: convaleſcents from other diſeaſes were very ſubject to this, but it generally proved mild. Thoſe labouring at the ſame time under chronic complaints, particularly rheumatiſm and hepatitis, were very ſubject to it. The puerperile fever became malignant, and of courſe fatal; and even pregnant negro women, who otherwiſe might have had it in the uſual mild degree peculiar to that deſcription of people, were reduced to a very dangerous ſituation by it. In ſhort, every diſeaſe in which the patient was liable to infection, ſooner or later aſ-

* Account of the Yellow Fever, in 1793.

ſumed

ſumed the appearance, and acquired the danger of the peſtilential fever." *

It is worthy of notice, that the fever deſcribed by Dr. Chiſholm did not infect beyond the diſtance of *ten* feet. Let us not be ſurpriſed therefore, that the yellow fever which infects acroſs ſtreets, ſhould impart its ſymptoms to all other diſeaſes.

Dr. Deſportes aſcribes the ſame univerſal empire to the yellow fever which prevailed in St. Domingo in the ſummer of 1733. "The fever of Siam (ſays the Doctor) conveyed an infinite number of men to the grave in a ſhort time; but I ſaw but one woman who was attacked by it."

"The violence of this diſeaſe was ſuch, that it ſubjected all other diſeaſes, and reigned alone. This is the character of all contagious and peſtilential diſeaſes. Sydenham, and before him Diemerbroek, have remarked this of the plague." †

In Baltimore the ſmall-pox in the natural way was attended with unuſual malignity and morta-

* P. 129, 130.

† P. 40, 41. See alſo p. 111—230, 231. Vol. I.

lity, occaſioned by its being combined with the reigning yellow fever.

It has been urged as an objection to the influence of powerful epidemics chaſing away, or blending with fevers of inferior force, that the meaſles ſometimes ſupplant the ſmall-pox, and mild intermittents take the place of fevers of great malignity. This fact did not eſcape the microſcopic eye of Dr. Sydenham, nor is it difficult to explain the cauſe of it. It is well known that epidemics, like ſimple fevers, are moſt violent at their firſt appearance, and that they gradually loſe their force as they diſappear; now it is in their evaneſcent and feeble ſtate, that they are joſtled out of their order of danger or force, and yield to the youthful ſtrength of epidemics, more feeble under equal circumſtances of age than themſelves. It would ſeem from this fact, that an inflammatory conſtitution of the air, and powerful epidemics both in their aggregate and individual forms, poſſeſſed a common character. They all invade with the fury of a ſavage, and retire with the gentleneſs of a civilized foe.

It is agreeable to diſcover from theſe facts and obſervations, that epidemic diſeaſes, however irregular they appear at firſt ſight, are all ſubject to certain laws, and partake of the order and harmony of the univerſe.

I have

I have remarked that this fever was contagious in a very few inſtances compared with the preceding year, but its operation upon the body, where, from the abſence of an exciting cauſe, it did not produce fever, was the ſame as I have elſewhere deſcribed. The ſenſations which I experienced in entering a room where a perſon was confined with this fever, were ſo exactly the ſame with thoſe I felt the year before, that I think I could have diſtinguiſhed the preſence of the diſeaſe without the aſſiſtance of my eyes, or without aſking a ſingle queſtion. After ſitting a few minutes near a perſon ill with this fever I became languid, and fainty. Weakneſs and chillineſs, followed every viſit I paid to a gentleman at Mr. Oellers's hotel, which continued for half an hour. A burning in my ſtomach, great heavineſs, and a ſlight inflammation in my eyes with a conſtant diſcharge of a watery humour from them for two days, ſucceeded the firſt viſit I paid to Mrs. Sellers. Theſe ſymptoms came on in leſs than ten minutes after I left her room. They were probably excited thus early, and in the degree which I have mentioned, by my having received her breath in my face by inſpecting her tonſils, which were ulcerated on the firſt attack of the fever. Three days after my eyes recovered from their watery and inflamed ſtate, I was expoſed to the action of the contagion in a concentrated ſtate by bleeding Mrs. Lloyd Jones.

One of my eyes again became ſore, and diſcharged water for two or three days afterwards. I have related theſe facts chiefly with a view of offering a conjecture as to the cauſe of the univerſal prevalence of opthalmias, or what are called ſore eyes, during the prevalence of great and powerful epidemics.* They were common in all the ſickly parts of the United States, in the year 1793, and appeared in many places, as well as in Philadelphia in the Autumn of 1794. They are probably occaſioned by a feeble and partial action of exhalation or contagion upon the ſyſtem.

I recollect having more than once perceived a ſmell which had been familiar to me during the time I was expoſed to the contagion of the yellow fever in 1793. It reſembled the ſmell of the liver of ſulphur. I ſuſpected for a while that it aroſe from the exhalations of the gutters of the city. But an accident taught me that it was produced by the perſpiration of my body. Upon rubbing my hands, this odor was encreaſed ſo as to become not only more perceptible to myſelf, but in the moſt ſenſible degree to my pupil Mr. Otto. From this fact I was ſatisfied that I was ſtrongly impregnated with the contagion, and I was led by it to live chiefly

* Hippocrates's Epidemics.

upon

upon vegetables, to drink no wine, and to avoid with double care, all the uſual exciting cauſes of fever.

There was another mark by which I diſtinguiſhed the preſence of the contagion of this fever in my ſyſtem, and that was, wine imparted a burning ſenſation to my tongue and throat, ſuch as is felt after it has been taken in exceſs, or in the beginning ſo a fever. Several perſons who were expoſed to the contagion of this fever informed me that wine even in the ſmalleſt quantity, affected them exactly in the ſame manner.

I ſaw one inſtance in which the diſeaſe was excited in twelve hours after the contagion was taken into the body. A lady lately from Rhode Iſland who laid ſo near a ſick gentleman in a public houſe as to be diſturbed by his groans, humanely went into his room in the morning to offer him all the relief that lay in her power. She found him in the act of puking black matter, and was much ſhocked at the yellow colour of his face. She did not ſuſpect his diſorder to be the yellow fever, for his phyſicians had denied or concealed it in the family. The ſpeedy death of this gentleman induced her to change her lodgings. In the evening of the ſame day ſhe went to the theatre, where ſhe was ſeized with a

chilly fit. The next day I was ſent for to viſit her. I found her ill with all the ſymptoms of the yellow fever. She was cured, but the danger and diſtreſs from which ſhe eſcaped, furniſhed an affecting inſtance of the cruelty of concealing or denying the exiſtence of contagious and malignant diſeaſes.

The contagious quality of this fever I have remarked, was not confined to its moſt malignant degrees. Malignity in a fever is not eſſential to the generation of contagion. Under certain circumſtances of the atmoſphere, the mildeſt intermittents are ſometimes propagated by contagion.

I attended four perſons in this fever who had had it, the year before.

I have mentioned elſewhere that the common modes of preventing the action of contagion on the ſyſtem had not only failed, but had probably favoured the ſpreading of the fever in 1793. I was made happy by obſerving that Dr. Chiſholm had borne a teſtimony againſt them, in his account of the jail fever of Grenada. It is by deſtroying a confidence in ſuppoſed preventives of the diſeaſe, that we ſhall lead people to the more rational ones of temperance and gentle doſes of phyſic. To a vegetable diet may be added ſuch a mixture of pepper as ſhall keep

keep up a conſtant and vigorous tone in the ſtomach and bowels, without imparting the leaſt new action to the blood veſſels. Mr. Bruce ſays in his travels, that in one of the ſickly countries which he viſited, the inhabitants obviated malignant fevers, by this practice. The quantity of pepper mixed with their rice was ſo great (he ſays), as to inflame the throats of perſons who were not accuſtomed to it. To this preventive, they add, abſtinence from ardent ſpirits, from weak broths, and decayed fruit. They moreover eat their principal meat after ſun-ſet, when the coolneſs of the night air imparts a tone to the ſtomach and thereby facilitates digeſtion.

It may appear paradoxical at firſt ſight, how generous living ſhould protect from common bilious, and low jail fevers, while it encreaſes the prediſpoſition to the yellow, and other peſtilential fevers. The reaſon is plain. The action in the blood veſſels in the common bilious and jail fevers is ſo feeble, that a full diet creates an action in the veſſels ſuperior to it, while the action excited by the contagion of peſtilential fevers is ſo violent, as not only to refuſe to yield to the ſtimulus of diet, but to be greatly increaſed by it.

Mr. Bruce relates further that thoſe perſons, who lived in ſmoky houſes, eſcaped bilious fevers. The effect

effect of ſmoke in checking contagion was evident, in the hoſpitals conſtructed without chimneys by Dr. Tilton, during the late war. The fire was kindled in the middle of the earthen floor of the hoſpital in a hole made in the earth, and the ſmoke after pervading the room, eſcaped through a hole in the roof of the building in a perpendicular direction to the fire place. Dr. Clark has added another fact in favor of the prophylactic virtues of ſmoke. In one inſtance which came under his notice, it preſerved the cooks who worked in a galley from being affected by a contagious fever.*

I have hitherto mentioned the means of preventing the attack of this fever upon individuals. I ſhall now add a few directions for preventing its admiſſion and propagation in cities.

1ſt. Let a law be paſſed to compel phyſicians, under a ſevere penalty, to report to a Committee appointed for that purpoſe, the exiſtence of a malignant contagious fever, as ſoon as they diſcover it in any part of the city. Let this Committee call a council of phyſicians to examine the caſe ſo reported; and if a majority of them concur in opinion of its contagious and dangerous nature, let the following ſteps be taken.

* Vol. I. p. 166.

2dly.

2dly, If the fever appear to have been imported from a foreign country, let the infected veſſel be removed from the wharf, and carefully waſhed and fumigated in the channel of the river, and let her cargo, if any part of it has been landed, be conveyed from the city.

3dly. If the fever appear to be of domeſtic origin, let the putrid matter which produced it be removed, or covered, ſo as effectually to deſtroy all poſſibility of future exhalation from it. While theſe precautions are going forward,

4thly. Let all the families which are within fifty yards of the infected perſon or perſons be ordered inſtantly to remove into houſes or tents, to be provided for them at the public expenſe. Let chains then be placed acroſs the ſtreets which lead to the ſick, and let guards be appointed to prevent all acceſs to the infected parts of the city, except by phyſicians, and nurſes, and ſuch other perſons as are neceſſary to be employed in a manner to be mentioned preſently.

The plan of removing the well inſtead of the ſick, to prevent the progreſs of peſtilential fevers is not a new one. It has been practiſed with ſucceſs in Ruſſia, and it has the following circumſtances to recommend

commend it. 1. It will prevent the contagion being ſpread by the ſick in paſſing through the ſtreets out of the city. 2. It will not be repugnant to humanity; for if the ſick be not ſuddenly deſtroyed by being informed of the cruel fate which awaits them, they often periſh from the motion which is neceſſary to remove them, or from the anguiſh of being torn from their families, or friends. 3. The diſcovery, and declaration of the exiſtence of malignant and contagious fevers will be *early*, and *unequivocal*, when an expulſion from the city will not be dreaded from it, and when the danger of the diſeaſe will thereby be leſſened, by the ceaſing of noiſes of all kinds in the neighbourhood, and the improbability of the ſick creating a reflected atmoſphere of contagion from the perſons who may be infected by them.

5. After the creation of the temporary deſert in the neighbourhood of the ſick (which may be done without their knowledge) let the proceſs of nature for deſtroying contagion and morbid exhalations be imitated. Let artificial ſhowers of rain be poured down by means of fire engines upon the infected houſes and upon the adjacent parts of the ſtreets, two or three times a day. This may be done by means of the city engines uſed for extinguiſhing fire.

The

The wealthy inhabitants of Smyrna preſerve themſelves in health by thus wetting their houſes, while the plague is deſtroying thouſands of their leſs opulent, or provident neighbours.

Let it not be inferred from the enumeration of the means of preventing the contagion of this fever, that I admit a contagious nature to be one of its characteriſtic marks. Far from it. It is an accidental circumſtance produced chiefly by the concurrence of the weather. The following ſtatement of facts relative to its contagious character in different ſeaſons, and countries, is the reſult of much inquiry upon this ſubject.

1ſt. It is in no inſtance contagious in ſome caſes.

2dly. It is ſometimes propagated by ſtrangers, to ſtrangers only, in the Weſt Indies.

3dly. It ſometimes affects the natives, as well as ſtrangers, in the Weſt India Iſlands.

4thly. It affects ſtrangers, natives, and negroes in ſome inſtances. This was the caſe in Philadelphia in 1793, and in Norfolk in 1795.

5thly. It affects adults only, and none under puberty, as in Jamaica according to Dr. Hume.

6thly.

6thly. It affects adults and children of all ages. This was evident in Philadelphia in 1793.

7thly. It affects other animals as well as the human ſpecies. It affected fowls and ducks in New York in the year 1795, and it affected cattle in Virginia, as I ſhall ſay preſently, in the year 1794.

8thly. It affects the inhabitants of cities, and not of the country, as in Charleſton in the years 1732, 1739, 1745, and 1748, and in Philadelphia in the year 1793.

9thly. It affects the inhabitants of both cities and country, as in the ſtate of New York in the year 1791.*

From theſe facts it would appear, that to ſuppoſe this fever ſhould infect uniformly in all caſes in order to acquire a contagious character, is as abſurd as to ſuppoſe that cold and heat do not produce inflammatory fevers, becauſe thouſands of people are conſtantly expoſed to them, without being indiſpoſed. An aptitude or prediſpoſition from ſeaſon, climate, or conſtitution, muſt concur to render the contagion of this, as well as other malignant fevers ſufficiently

* Dr. Addoms's Theſis.

active

active to produce a diſeaſe. As well might a traveller attempt to deſcribe the climate of a new country, from the hiſtory of a ſingle ſeaſon, as a phyſician fix the character of an epidemic from its appearance in one ſeaſon, or in one country. To know a diſeaſe perfectly, it ſhould be ſeen, or ſtudied in ſucceſſive ſeaſons, and in different countries.

It remains now that I mention the origin of this fever. This was very evident. It was produced by the exhalations from the gutters, and the ſtagnating ponds of water in the neighbourhood of the city. Where there was moſt exhalation, there were moſt perſons affected by the fever. Hence the poor people, who generally live in the neighbourhood of the ponds in the ſuburbs, were the greateſt ſufferers by it. Four perſons had the fever in Spruce, between Fourth and Fifth Streets, in which part of the city, the ſmell from the gutters was extremely offenſive every evening. In Water Street between Market and Walnut Streets, many perſons had the fever: now the filth of that confined part of the city is well known to every citizen.—I have before remarked that one reaſon why moſt of our phyſicians refuſed to admit the preſence of the yellow fever in the city, was becauſe they could not fix upon a veſtige of its being imported. On the 25th of Auguſt

Auguſt the Brig Commerce arrived in the river from St. Mark, commanded by Captain Shirtliff. After lying five days at the Fort ſhe came up to the city. A boy who had been ſhut out from his lodgings, went in a ſtate of intoxication, and ſlept on her deck, expoſed to the night air, in conſequence of which the fever was excited in him. This event gave occaſion for a few days to a report that the diſeaſe was imported, and ſeveral of the phyſicians who had neglected to attend to all the circumſtances that have been ſtated, admitted the yellow fever to be in town. An inveſtigation of this ſuppoſed origin of the diſeaſe ſoon diſcovered that it had no foundation. At the time of the arrival of this ſhip I had attended nearly thirty perſons with the fever, and upwards of an hundred had had it, under the care of other phyſicians.

Since the publication of my proofs of the generation of the yellow fever, in our city in the year 1793, I have had many reaſons to be confirmed in the opinion I then defended. My arguments have carried conviction to the minds of every unprejudiced citizen of the United States. Dr. Prieſtley, whoſe knowledge and judgment upon ſubjects connected with volatile fluids, whether pure or impure, muſt be admitted by all who know him, has admitted my facts and reaſonings, notwithſtanding he ſat down

down to read them under the influence of prejudices on the other ſide of the queſtion. Dr. Black the father of modern chemiſtry, has likewiſe admitted my opinion of the origin of the yellow fever of 1793, in a converſation with my former pupil Dr. Coxe in Edinburgh. The two following facts will help ſtill further to eſtabliſh the origin of the bilious fever in its different grades, from vegetable putrefaction, and will ſhew that in medicine, as well as in government, great events, often ſpring from little cauſes. In a letter I received near two years ago from Dr. George Davidſon of the iſland of St. Vincents dated July 22d 1794, is the following communication.

" The yellow fever is evidently produced by a peculiar ſtate of the air, and by marſh exhalations. The ſituation of thoſe habitations where it firſt appears, near to ſtagnant water, or ſwamps, point out this to be its origin. The governor's guard on this Iſland was ſtationed in an old bathing houſe. The ſtream of water which had run through it, had been diverted from it, but a quantity of mud and filth had been allowed to accumulate in a watering ſtone trough near the door; in conſequence of which ſeveral of the guards were ſeized before morning with the uſual ſymptoms of the yellow fever. Above ten died before the cauſe was diſcovered, and im-

mediately upon removing it, the guard became healthy."

The children of a family in this city, were obſerved for ſeveral ſucceſſive years to be affected by a bilious remitting fever. The phyſician of the family the late Dr. Phineas Bond, obſerving no other perſons to be affected in the ſame way in the neighbourhood, ſuſpected that the fever aroſe from ſome local cauſe. He examined the yard belonging to the houſe, where he found an offenſive duck pond. This pond was filled up, and the family remained afterwards free from an annual bilious fever.

Sporadic caſes of fever, I believe, are often created by the noxious air of water courſes, cellars, and ſinks of houſes that are equally unſuſpected with the filth of the duck pond. A citizen of Philadelphia who had a ſink in his kitchen, loſt a number of dogs and cats by convulſions. At length one of his ſervants was affected with the ſame diſorder. This led him to inveſtigate the cauſe of it. He ſoon traced it to his ſink. By altering its conſtruction, ſo as to prevent the eſcape of noxious air from it, he deſtroyed its unwholeſome quality, ſo that dogs and cats lived in good health afterwards in his kitchen.

In

In my former publication upon the yellow fever, I mentioned the effects of heavy rains in checking it. But several observations made in the West Indies prove that this effect of rain is not uniform. The following fact extracted from a second letter from Dr. Davidson, dated the 12th of November 1794, will explain the cause of the occasional deviations from the general remark upon this subject.

"Being ordered (says the Doctor) up to Barbadoes last November upon service, I found that the troops there had suffered considerably by that formidable scourge the yellow fever. The season had been remarkably dry. It was observed that a rainy season contributed to make the troops healthier, excepting at Constitution hill, where the sixth regiment was stationed, and where a heavy shower of rain never failed to bring back the fever after it had ceased for some time. I found the barrack where this regiment was, surrounded by a pond of brackish water, which being but imperfectly drained by the continuance of the drought, the surface was covered with a green scum which prevented the exhalation of marshy exhalation. After a heavy shower of rain this scum was broken, and the miasmata were evolved, and acted with double force in proportion to the time of their retention."

The generation of the yellow fever in our city was rendered more certain by the prevalence of bilious diſeaſes in every part of the United States, and in ſeveral of them, in the grade of yellow fever. It was common in Charleſton in South Carolina, where it carried off many people, and where no ſuſpicion was entertained of its being of Weſt India origin. It prevailed with great mortality at that part of the city of Baltimore which is known by the name of Fell's Point, where Dr. Dryſdale aſſures me it was evidently generated. A few ſporadic caſes of it occurred in New York, which were produced by the morbid exhalation from the docks of that city. Sporadic caſes of it occurred likewiſe in moſt of the ſtates, in which the proofs of its being generated were obvious to common obſervation; and where the ſymptoms of depreſſed pulſe, yellowneſs of the ſkin, and black diſcharges from the bowels and ſtomach (ſymptoms which mark the higheſt grade of bilious remitting fever) did not occur, the fevers in all their forms of tertian, quotidian, colic, and dyſentery, were uncommonly obſtinate, or fatal in every ſtate in the Union. In New Haven only where the yellow fever was epidemic, it was ſaid to have been imported from Martinique. It is poſſible this was the caſe, but I ſuſpect that this fever has often been aſcribed to importation, from the circumſtance

ſtance of its appearing firſt on board of ſhips, and among ſailors who have juſt arrived from Weſt India voyages, into whom the ſeeds of the fever are often conveyed by the proximity of the ſhips to filthy wharves and docks, and in whom they are afterwards excited into action by hard labour or intemperance. But where this is not the caſe, I believe the diſeaſe is ſometimes excited by the effluvia of ſuch parts of the cargoes of ſhips as are capable of putrefaction, and which act with morbid force as ſoon as they are brought into contact with the air. A ſolitary inſtance of a fever which terminated fatally, occurred in this city a few years ago, from the ſmell of wine, which had become putrid in the hold of a ſhip, but which was inoffenſive until it was removed.

For a while I believed that I was the firſt perſon who had aſſerted that a yellow fever had been generated in Philadelphia; but my friend Mr. Samuel Coates, lately put into my hands a clinical lecture delivered in the Pennſylvania Hoſpital by the late Dr. Thomas Bond, on the 3d of December 1766, and which was preſerved by order of the managers in the third volume of their Minutes, in which the Doctor ſays that he had ſeen the yellow fever five times in Philadelphia. The ſecond time he ſaw it, it was *indigenous*, from evident cauſes, and

was confined to one ſquare of the city. The locality of this fever deſignates its putrid origin, and bilious character. Bilious fevers of all degrees are often limited in their progreſs by winds, trees, hills, houſes, and other circumſtances. Dr. Bond mentions in the ſame lecture that an intermittent prevailed in the year 1765 from the ſouthern parts of Philadelphia to Georgia, affecting two-thirds of all the inhabitants in that extenſive tract of country; and yet at this time the city of Philadelphia, except its ſouthern ſuburbs, was healthy. The break-bone, or bilious fever of 1780, was confined chiefly to the eaſtern and ſouthern ſtreets of Philadelphia.

The year 1795 furniſhed ſeveral melancholy proofs of the American origin of the yellow fever. All the Phyſicians and citizens of New-York and Norfolk agree in its having been generated in their reſpective cities laſt year. It prevailed with great mortality at the ſame time in the neighbourhood of the Lakes, and on the waters of the Geneſee river in the ſtate of New-York. From its ſituation it obtained the name of the Lake and Geneſee fever. It was ſo malignant in ſome parts of that new country as to affect horſes.

I have been frequently rebuked by my friends for my attempts to prove that the yellow fever is one of

of the indigenous diſeaſes of our country, inaſmuch as the opinion expoſed me to much unneceſſary perſecution, and thereby created an oppoſition to the remedies I had uſed and recommended for the cure of that diſorder. I have conſtantly anſwered theſe remonſtrances by declaring the eſtabliſhment of my opinion to be deeply intereſting to mankind, and particularly to the inhabitants of the United States, where an idea that the yellow fever could exiſt among us only by importation has, until lately, very generally prevailed.

Climates and ſeaſons are not neceſſarily ſickly. The ſun would ſeldom ſmite by day, nor the moon by night, were pains taken to prevent the accumulation and putrefaction of thoſe matters which occaſion malignant bilious fevers. Thoſe parts of the Weſt India iſlands which are removed from the neighbourhood of marſh exhalations, are uncommonly healthy. Of this Dr. Lind has given us many ſtriking inſtances. Dr. Chiſholm has lately added his teſtimony to the truth of the ſame obſervation. * It is further confirmed by the following extract of a letter from Dr. Davidſon, dated November 12th, 1794. "I have mentioned an inſtance (ſays the Doctor) of the remarkable good

* Introduction, p. 30.

ſtate of health which the 66th regiment enjoyed at St. Vincents for ſeveral years, upon a high hill above the town, removed from all exhalations, and in a ſituation kept at all times cool by the blowing of a conſtant trade wind. They did not loſe during eighteen months above two or three men (the regiment was completed to the peace eſtabliſhment), and during eight years, they loſt only two officers, one of whom, the quarter maſter, reſided conſtantly in town, and died from over fatigue; the other arrived very ill from Antigua, and died within a few days afterwards." But this is not all. There are many proofs that uncommon degrees of longevity as well as health, are to be met with in all the Weſt India Iſlands.

Theſe facts are important, inaſmuch as they manifeſt the goodneſs of Heaven in having ſurrendered every part of the globe to man in a ſtate capable of being inhabited and enjoyed. They ſhew moreover the connection between health and longevity, and the reaſon and labour of man.

Under the impreſſion of this ſentiment, it would be criminal in me to ceaſe to propagate the opinion of the domeſtic origin of the yellow fever. It leads to the annihilation of more human miſery than is produced by war or famine. From the ſucceſs which

which has attended perſeverance in inculcating opinions equally odious and unpopular, I am ſatisfied that truth, upon this ſubject, muſt prevail, and that I ſhall ſooner or later be believed and forgiven.

To every natural evil Heaven has diſcovered or prepared an antidote. The yellow fever furniſhes no exception to this remark. The means of preventing it are as much under the power of human reaſon and induſtry, as the means of preventing the evils of lightning and common fire. I am ſo ſatisfied of the truth of this opinion, that I look for a time, when our courts of law ſhall puniſh cities and villages for permitting a ſingle caſe of bilious or yellow fever to exiſt within their juriſdiction.

I ſhall conclude this account of the origin of the yellow fever by relating a fact which ſerious and contemplating minds will apply to a more intereſting ſubject.

Notwithſtanding the numerous proofs of the prevalence of the yellow fever in Philadelphia in the year 1794 which have been mentioned, there are many thouſands of our citizens, and a majority of our phyſicians, who do not believe that a caſe of it exiſted at that time in the city; nor is a ſingle record of it to be met with in any of the newſpapers,

or

or other public documents of that year. Let us learn from this fact, that the denial of events, or a general ſilence upon the ſubject of them, is no refutation of their truth, where they oppoſe the pride or intereſts of the learned or the great.

What the exact ſtate of the atmoſphere is, which diſpoſes to malignant fevers, is difficult to determine. Two things are obvious with reſpect to it. 1. It pervades at the ſame time a great extent of country. This was evident in the years 1793 and 1794 in the United States. During the ſame year the yellow fever was epidemic in moſt of the Weſt India iſlands. Many of the epidemics mentioned by Dr. Sims * affected in the ſame years the moſt remote parts of the continent of Europe. Even the ocean partakes of a morbid conſtitution in its atmoſphere, and diſeaſes at ſea, ſympathiſe in violence with thoſe of the land, at an immenſe diſtance from each other. This appears in a letter from a ſurgeon on board a Britiſh ſhip of war to Mr Gooch, publiſhed in the third volume of his medical and ſurgical obſervations. 2. This prediſpoſing ſtate of the atmoſphere to induce malignant diſeaſes continues for ſeveral years, under all the circumſtances of wet and dry, and of hot and cold weather.

* Medical Memoirs, Vol. I.

The

The weather in 1794 differed materially from the weather in 1793, in the United States, in each of the above particulars; and yet the atmosphere continued to maintain that quality which predispose to a malignant state of bilious fever.

This morbid peculiarity in the air is taken notice of by Dr. Sydenham, and acknowledged by him as an obscure circumstance in the history of epidemics. It resembles a solitary fever and a general epidemic, in beginning with violence, and gradually wasting its inflammatory force by time. To what change in the state of the air, or to what impregnation of it, shall we attribute its disposition to impart a greater degree of malignity or inflammatory diathesis to diseases at one time than at another? Hippocrates, who felt the influence of this diathesis in his practice, ascribes it to "a divine something" in the atmosphere. Dr. Sydenham attributes it to certain mineral vapours exhaled from the bowels of the earth. I have suspected it to be the effect of a preternatural quantity of oxygen in the atmosphere. I know that the experiments of Mr. Sheele and Mr. Cavendish prove that the proportions of azote and oxygen are the same in different situations and different kinds of weather; but as their experiments were not made at a time when diseases of a high degree of inflammatory action were epidemic, I do not

not think they militate againſt my hypotheſis. I lament that the want of eudiometrical inſtruments prevented my deciding this queſtion by actual experiments, during the prevalence of our late inflammatory epidemics; but the following facts will, I hope, render the hypotheſis probable. 1. The diſeaſe was moſt violent in thoſe perſons in whom there is ſuppoſed to be the greateſt quantity of oxygen, viz. the young and the robuſt, and more eſpecially thoſe who live freely. 2. It affected thoſe perſons moſt violently who had lately arrived from places or ſituations in which oxygen abounded. Country people ſuffered more, under equal circumſtances, from the fever, than the citizens of Philadelphia; but it was moſt violent in perſons who, after ſpending four or five weeks at the ſea-ſhore, returned to the city in the months of September and October. This was the caſe with Peter Brown and Henry Clymer, who ſickened ſoon after they inhaled the atmoſphere of our city, and were both affected by the fever in a very high degree. I ſhould have ſuſpected that the uncommon malignity of the diſeaſe in thoſe two gentlemen aroſe from the indolence and plentiful diet which conſtitute part of the pleaſure of an excurſion to the ſea-ſhore, had I not met with ſeveral caſes of equal violence in perſons who had juſt arrived from ſea voyages, under circumſtances by no means apt to produce inflammable

diatheſis

diatheſis in the blood-veſſels. 3. The colour of the blood in moſt caſes of yellow fever, as I ſhall ſay hereafter, was ſuch as is imparted by oxygen. It is poſſible the air may communicate as much oxygen to the blood, as is ſufficient to produce a prediſpoſition to inflammatory diſeaſes, and yet refuſe to diſcover itſelf in an undue quantity to an eudiometrical experiment; for Dr. Beddoes, to whoſe authority upon this ſubject I yield my judgment, ſays, and I believe very juſtly, in a letter I received from him, dated May 3d, 1795, that "he has no doubt, but a ſmall exceſs of oxygen is equal to the production of highly inflammatory action."

If it ſhould be found hereafter, that no exceſs in the quantity of oxygen in the atmoſphere takes place during the prevalence of malignant fevers, I ſhall ſtill ſuſpect it to be their prediſpoſing cauſe, and that it may poſſibly be derived from the aliments and fruits of the ſeaſon; for all writers take notice of a connection between great and mortal epidemics, and a deviation in quality or quantity from common years in the vegetable products of the earth.

The exhalations or gaſes, which by acting upon an inflammatory prediſpoſition produce a yellow fever, have been called by different names, accord-

ing

ing as they act in a simple or compound state. They all act as stimulants upon the whole system, and in a more especial manner upon the liver. This is evident, not only in the affections of that viscus in bilious fevers, but in the morbid appearances of the liver in cattle that feed in marshy pasture in the fall of the year. These appearances were so universally admitted to be the effect of an unwholesome atmosphere among the ancients, that they inspected the livers of animals, in order to determine on the healthy or unhealthy situation of the spots on which they wished to live.

Dr. Cleghorn describes a morbid state of the liver in cattle in an unhealthy part of the island of Minorca. Dr. Grainger takes notice of the same appearances in the livers of several domestic animals in Holland, in the year 1743. * But our own country has furnished facts to illustrate the truth of this observation. Mr. James Wardrobe, near Richmond in Virginia, informed me, that in the month of August 1794, at a time when bilious fevers were prevalent in the neighbourhood, his cattle were seized with a disease which is known by the name of the yellow water, and which appears to be a true yellow fever. They were attacked with a staggering.

* Cap. III.

Their

Their eyes were muddy or ferocious: a coſtiveneſs attended in all caſes. It killed in two days. Fifty-two of his cattle periſhed by it. Upon opening ſeveral of their dead bodies, he found the liver ſwelled and ulcerated. The blood was diſſolved in the veins. In the bladder of one of them he found thirteen pints of blood and water. Curioſity led him to inoculate two of his calves from the blood of a diſeaſed animal. They both ſickened in eight days, and after being lightly indiſpoſed, they both recovered.

I have avoided deciding upon the ſpecific nature of the exhalations which induce diſeaſes: This ſubject has been purſued with great ardor by Profeſſor Mitchell of New-York. His accurate knowledge of the laws of the animal economy, added to the records of the late unſucceſsful application of the principles of electricity and fixed air to medicine, will, I hope, defend him from an undue application of his ingenious diſcoveries to the theory and practice of phyſic.

It is no objection to the influence of theſe exhalations in diſordering the liver, that the cattle killed and ſold in the Philadelphia market in the autumns of 1793 and 1794 exhibited, in only one inſtance that has come to my knowledge, the leaſt mark of diſeaſe;

eaſe; for thoſe cattle fed in paſtures previouſly to their being killed, in which no exhalation took place. This was evident from the uncommon healthineſs of the people in that part of the neighbourhood of the city, from whence the cattle were brought a day or two before they were killed.

Thus I have endeavoured to fix the prediſpoſing and remote cauſes of the yellow fever in our country. The remote cauſe is ſometimes ſo powerful, as to become an exciting cauſe of the diſeaſe; but in general, both the prediſpoſing and remote cauſes are harmleſs in the ſyſtem, until they are rouſed into action by ſome exciting cauſe.

Before I proceed to mention the remedies which were uſed in the cure of the fever which has been deſcribed, I ſhall ſubjoin ſcales of the relative contagious nature, of the diſtance of infection, and of the mortality of the moſt common contagious fevers, beginning with thoſe which predominate under each head.

I.

A ſcale of the extent or *univerſality* of contagious fevers.

1. Small-pox.
2 Meaſles.

3. Influenza.
4. Plague.
5. Bilious fever in the form of yellow fever in certain ſeaſons and places.
6. Cynanche ſcarlatina.
7. Cynanche maligna.
8. The dyſentery.
9. The common bilious remitting fever.
10. The common intermitting fever.

The influence of climate, weather and habit of body, ſometimes vary this ſcale, but the relative order in which the above fevers affect a greater or leſs number of people, I believe in common years, and in moſt countries, accords with the obſervations of moſt phyſicians.

II.

Scale of the relative *diſtance* at which contagious fevers propagate themſelves.

1. Small-pox.
2. Meaſles.
3. Influenza.
4. Yellow fever.
5. Plague.
6. Jail fever.
7. Cynanche maligna.

8. Cynanche ſcarlatina.
9. Dyſentery.
10. The common intermitting fever.

III.

Scale of the relative *mortality* of contagious diſeaſes.

1. The plague.
2. The yellow fever.
3. The jail fever;
4. The cynanche maligna.
5. The dyſentery.
6. The natural ſmall-pox.
7. The cynanche ſcarlatina.
8. The influenza and meaſles.
9. The common bilious fever.
10. The common intermitting fever.

The above ſcale repreſents the relative order of contagious fevers when left to themſelves. Difference of climate, ſeaſon, habit of body, and above all, difference of treatment greatly vary their relative mortality. For example, in Jamaica a fourth and in St. Domingo one half ſometimes die of the yellow fever who take bark and wine, whereas in Philadelphia the mortality, as will be ſhewn hereafter does not exceed more than one in fifty, where depleting remedies are uſed in their proper extent.

Metho

Of the Method of Cure.

THE remedies employed for the cure of this fever, were the ſame that I employed the year before. I ſhall only relate ſuch effects of them as tend more fully to eſtabliſh the practice adopted in the year 1793, and ſuch as eſcaped my notice in my former obſervations upon thoſe remedies. My method of cure conſiſted

I. In the abſtraction of the ſtimulus of blood, and heat from the whole body, and of bile, and other acrid humors from the bowels, by means of the following remedies:

1. Bleeding.
2. Purging.
3. Cool air, and cold drinks.
4. Cold water applied to the external parts of the body, and to the bowels by means of glyſters.

II. In creating a diverſion of congeſtion, inflammation, and ſerous effuſion, from the brain and viſcera to the mouth, by means of a ſalivation, and to the external parts of the body, by means of bliſters.

III. In reſtoring the ſtrength of the ſyſtem, by tonic remedies.

I proceed to make a few remarks upon the remedies ſet down under each of the above heads.

I. OF BLEEDING.

I HAVE taken notice that this fever differed from the fever of 1793, in coming forward in July and Auguſt with a number of paroxyſms, which refuſed to yield to purging alone. I therefore began the cure of every caſe I was called to by bleeding.

I ſhall mention the effects of this remedy, and the circumſtances, manner, and degrees in which I uſed it occaſionally, in this fever, in my defence of bloodletting. Under the preſent head I ſhall only furniſh the reader with a table of the quantity of blood drawn

drawn from a number of my patients in the courſe of the diſeaſe. From ſeveral of them the quantity ſet down, was taken in three, four, and five days. I ſhall afterwards deſcribe the appearances of the blood.

Month.	Patients.	Quantity ounces.	Number of times bled.
Auguſt.	Peter Denham.	50	5
	Mrs. Bruce.	70	7
	Andrew Gribble aged 15 years.	50	5
	John Madge.	150	12
	Peter Brown.	80	8
September.	Mrs. Gardiner.	80	7
	Miſs Sally Eyre.	80	9
	Mrs. Gaſs.	50	3
	Richard Wells's maid.	100	10
	Mr. Norval.	100	9
	Mr. Harriſon.	90	9
	Henry Clymer.	80	8
October.	Mrs. Mitchell.	120	13
	Mrs. Lenox.	80	7
	Mrs. Kapper.	140	11
	Rev. Dr. Magaw's maid.	100	10
	Miſs Hood.	100	10
	Mrs. Vogles.	70	5
1795	Guy Stone.	100	9
January.	Benj. Hancock.	100	10
	Mr. Benton.	130	13
	Mrs. Fries.	150	15
	Mrs. Garrigues,	80	7

Three of the women whoſe names I have mentioned, were in the advanced ſtage of pregnancy, viz. Mrs. Gardiner, Mrs. Gaſs, and Mrs. Garrigues. They have all ſince borne healthy children. I have omitted the names of above one hundred perſons who had the fever, from whom I drew thirty or forty ounces of blood by two or three bleedings. I did not cure a ſingle perſon without at leaſt one bleeding.

It is only by contemplating the extent in which it is neceſſary to uſe this remedy, in order to overcome a yellow fever, that we can acquire juſt ideas of its force. Hitherto this force has been eſtimated by no other meaſure than the grave, and this we know puts the ſtrength of all diſeaſes upon a level.

The blood drawn in this fever exhibited the following appearances.

1. It was diſſolved in a few inſtances.

2. The craſſamentum of the blood was ſo partially diſſolved in the ſerum as to produce an appearance in the ſerum reſembling the waſhings of fleſh in water.

3. The ſerum was ſo lightly tinged of a *red* colour as to be perfectly tranſparent.

4. The

4. The ſerum was in many caſes of a deep *yellow* colour.

5. There was in every caſe in which the blood was not diſſolved, or in which the ſecond appearance that has been mentioned did not take place, a beautiful ſcarlet coloured ſediment in the bottom of the bowl, forming lines, or a large circle. It ſeemed to be a tendency of the blood to diſſolution. This ſtate of the blood occurred in almoſt all the diſeaſes of the laſt two years, and in ſome in which there was not the leaſt ſuſpicion of the miaſmata or contagion of the yellow fever.

6. The craſſamentum generally floated in the ſerum, but it ſometimes ſunk to the bottom of the bowl. In the latter caſe, the ſerum had a muddy appearance.

7. I ſaw but one caſe in which there was not a ſeparation of the craſſamentum and ſerum of the blood. Its colour in this caſe was of a deep ſcarlet. In the year 1793 this appearance was very common.

8. I ſaw one caſe in which the blood drawn, amounting to 14 ounces, ſeparated partially, and was of a deep *black* colour. This blood was taken from Mr. Norval a citizen of North Carolina, who had

been infected with the fever by ſleeping in the ſame room with Mr. Harriſon, a citizen of Virginia.

9. There was in ſeveral inſtances a tranſparent jelly-like pellicle which covered the craſſamentum of the blood, and which was eaſily ſeparated from it, without altering its texture. It appeared to have no connection with the blood.

10. The blood towards the criſis of the fever in many people exhibited the uſual forms of inflammatory cruſt. It was cupped in many inſtances.

11. After the loſs of 70 or 80 ounces of blood, there was an evident diſproportion of the quantity of craſſamentum to the ſerum. It was ſometimes leſs by one half, than in the firſt bleedings.

Under this head, it will be proper to mention that the blood when it happened to flow along the external part of the arm in falling into the bowl, was ſo warm as to excite an unpleaſant ſenſation of heat in ſeveral patients.

To the appearances exhibited by the blood to the eye, I ſhall add a fact communicated to me by a German bleeder who followed his buſineſs in the city during the prevalence of the fever in 1793. He

He informed me that he could diſtinguiſh a yellow fever from all other ſtates of fever, by a peculiar ſmell which the blood emitted while it was flowing from a vein. From the certainty of his deciſion in one caſe which came under my notice, before a ſuſpicion had taken place of the fever being in the city, I am diſpoſed to believe that there is a foundation for his remark.

2. OF PURGING.

I HAVE but little to add under this head to the obſervations that I have made upon this remedy in the year 1793. I purged with jalap, calomel, and gamboge until I obtained large and dark-coloured ſtools; after which I kept the bowels gently open every day with caſtor oil, cremor tartar, or Glauber ſalts. I gave calomel in much larger quantities that I did the year before. John Madge took nearly 150 grains of it in ſix days. I ſhould have thought this a large quantity, had I not ſince read that Dr. Chiſholm gave 400 grains of it to one patient in the courſe of his fever, and 50 grains to another at a ſingle doſe, three times a-day. I found ſtrong mercurial purges to be extremely uſeful in the

the winter months, when the fever put on ſymptoms of pleuriſy. I am not ſingular in aſcribing much to the efficacy of purges in the bilious pleuriſy. Dr. Deſportes tells us, that he found the pleuriſy of St. Domingo, which was of the bilious kind, to end happily in proportion as the bowels were kept conſtantly open. * Nor am I ſingular in keeping my eye upon the original type of a diſeaſe, which only changes its ſymptoms with the weather or the ſeaſon, and in treating it with the ſame remedies. Dr. Sydenham bled as freely in the diarrhœa of 1668, as he had done in the inflammatory fever of the preceding year. † How long the pleuriſies of winter, in the city of Philadelphia, may continue to retain the bilious ſymptoms of autumn, which they have aſſumed for three years paſt, I know not; but the late Dr. Fayſſeaux of South Carolina informed me, that for many years he had not ſeen a pleuriſy in Charleſton with the common inflammatory ſymptoms which characterized that diſorder, when he was a ſtudent of medicine. They all now put on bilious ſymptoms, and require ſtrong purges to cure them. The pleuriſies which the late Dr. Chalmers ſuppoſes he cured by purging, were probably nothing but bilious fevers, in which the cool weather had excited ſome pleuritic ſymptoms.

* P. 140. † Wallis's edition, p. 211. Vol. I.

3. I have nothing to add to the obſervations I have elſewhere publiſhed upon the efficacy of cool air and cold drinks in this fever. They were both equally pleaſant and uſeful, and contributed, with cleanlineſs, very much to the ſucceſs of my practice.

4. Cold water applied to the external parts of the body, and injected into the bowels by way of glyſter, did great ſervice in many caſes. John Madge found great relief from cloths dipped in cold water and applied to the lower part of his belly. They eaſed a pain in his bowels, and procured a diſcharge of urine. A throbbing and moſt diſtreſſing pain in the head, was relieved by the ſame remedy in Mrs. Vogles and Mrs. Lenox. The cloths were applied for three ſucceſſive days and nights to Mrs. Lenox's head, during an inflammation of her brain, which ſucceeded her fever, and were changed during the greater part of the time, every ten or fifteen minutes. In 1795 I increaſed the coldneſs of pump water when uſed in this way, by diſſolving ice in it, and in ſome caſes I applied powdered ice in a bladder to the head, with great advantage.

The following facts will ſhew the good effects of cold water in this, as well as other fevers of too much action. In the afternoon of one of thoſe days in which my ſyſtem was impregnated with the contagion

gion of the yellow fever, I felt ſo much indiſpoſed that I deliberated whether I ſhould go to bed, or viſit a patient about a mile in the country. The afternoon was cool and rainy. I recollected at this time a caſe related by Dr. Daignan, a French phyſician, of a man who was cured of the plague by being forced to lie all night in an open field in a ſhower of rain. I got into my chair, and expoſed myſelf to the rain. It was extremely grateful to my feelings. In two hours I returned, when to my great ſatisfaction I found all my feveriſh ſymptoms had left me, nor had I the leaſt return of them afterwards. Dr. Caldwell, who acted as a ſurgeon of a regiment in the expedition againſt the inſurgents in the weſtern counties of Pennſylvania, furniſhed me, in a letter dated from Bedford, October 20th, 1794, with an account of his having been cured of a fever by a more copious uſe of the ſame remedy. "I was (ſays the Doctor) to uſe a vulgar expreſſion, *wet to the ſkin*, and had no opportunity of ſhifting my clothes for ſeveral hours. In conſequence of this thorough bathing, and my ſubſequent expoſure to a cool air, I was relieved from every ſymptom of indiſpoſition in a few hours, and have enjoyed more than my uſual ſtock of health ever ſince."

The efficacy of cold water in preventing and curing inflammation, may be conceived from its effects

fects when uſed with mud or clay, for obviating the pain and inflammation which ariſe from the ſting of venomous inſects. The ſame remedy applied for half an hour has lately, it is ſaid, been equally effectual in preventing the deleterious effects of the bite of a rattle-ſnake.

II. The good effects I had obſerved from a SALIVATION in the yellow fever of 1793, induced me to excite it as early as poſſible in all thoſe caſes which did not yield immediately to bleeding and purging. I was delighted with its effects in every caſe in which I uſed it. Theſe effects were as follow:

1. It immediately attracted and concentrated in the mouth, all the ſcattered pains of every part of the body.

2. It checked a nauſea and vomiting.

3. It gradually, when it was copious, reduced the pulſe, and thereby prevented the neceſſity of further bleeding or purging.

I wiſh it were poſſible to render the uſe of this remedy univerſal in the treatment of malignant fevers. Dr. Chiſholm, in his Account of the Boullam

lam fever, has done much to eſtabliſh its ſafety and efficacy. It is a rare occurrence for a patient that has been ſufficiently bled and purged, to die after a ſalivation takes place. The artificial diſeaſe excited by the mercury, ſuſpends or deſtroys diſeaſe in every part of the body. The occaſional inconveniences which attend it, are not to be named with its certain and univerſal advantages. During the whole of the late ſeaſon in which the yellow fever prevailed, I ſaw but two inſtances in which it probably looſened or deſtroyed the teeth. I am not ſatisfied that the mercury was the cauſe of the injury or loſs of thoſe teeth; for who has not ſeen malignant fevers terminate in ulcers, which have ended in the eroſions of bony parts of the body?

It has been juſtly remarked, that there can be but one action at a time in the blood-veſſels. This was frequently illuſtrated by the manner in which mercury acted upon the ſyſtem in this fever. It ſeldom ſalivated until the fever intermitted or declined. I ſaw ſeveral caſes in which the ſalivation came on during the intermiſſion, and went off during its exacerbation; and many, in which there was no ſalivation until the morbid action had ceaſed altogether in the blood-veſſels, by the ſolution of the fever. It is becauſe the action of the veſſels in epilepſy and pulmonary conſumption ſurpaſſes the ſtimulus

mulus of the mercury, that it is so difficult to excite a salivation in both those disorders.

Let not the advocates for the healing powers of nature complain of a salivation as an unnatural remedy in fevers. Dr. Sydenham speaks in high terms of it in the fever of 1670, 1671, and 1672, and says that it cured it when it was so malignant, as to be accompanied by purple spots on the body.*

BLISTERS, when applied at a *proper* time, did great service in this fever. This time was, when the fever was so much weakened by evacuations, that the artificial pain excited by the stimulus of the blisters destroyed, and, like a conductor, conveyed off, all the natural pain of the body. It is from ignorance, or inattention to the proper stage of fevers in which blisters have been applied, that there have been so many disputes among physicians respecting their efficacy. When applied in a state of great arterial action, they do harm: When applied after that action has nearly ceased, they do little or no service. I have called the period in which blisters are useful, the *blistering point*. In bilious fevers this point is generally circumscribed within eight-and-forty hours.

* Vol. II. p. 212.

The

The effects of bliſters were as follow:

1. They concentrated, like a ſalivation, all the ſcattered pains of the body, and thereby

2. Reduced the pulſe in force and frequency.

3. They inſtantly checked a ſickneſs at the ſtomach and vomiting.

4. They often induced a gentle moiſture upon the ſkin.

I found it of little conſequence to what part of the body the bliſters were applied; for I obſerved a pain in the head, and even delirium, to be as ſpeedily and certainly cured by bliſters upon the wriſts, as they were by a large bliſter to the neck.

III. After the reduction of the morbid action of the blood-veſſels, by means of the remedies which have been mentioned, I ſeldom made uſe of any other tonic than a nouriſhing and gently ſtimulating diet. This conſiſted of ſummer fruits, bread and milk, chicken broth, the white meats, eggs, oyſters, and malt liquors, more eſpecially porter. I made many attempts to cure this fever when it appeared in the form of a ſimple intermittent, by means of

BARK, without malignant ſymptoms, but always, except in two inſtances, without ſucceſs; and in them it did not take effect until after bleeding. In ſeveral caſes it evidently did harm. I ſhould have ſuſpected my judgment in theſe obſervations reſpecting this medicine, had I not been aſſured by Dr. Griffitts, Dr. Phyſick, and Dr. Woodhouſe, that it was equally ineffectual in their practice, in nearly all the caſes in which they gave it, and even where blood-letting had been premiſed. Dr. Woodhouſe ſaw a caſe in which near a pound of bark had been taken without effect; and another, in which a fatal dropſy ſucceeded its uſe. Dr. Griffitts excepted from his teſtimony againſt the bark, the caſes of ſeven perſons from the country, who brought the ſeeds of the intermitting fever with them to the city. In them, the bark ſucceeded without previous bleeding. The facility with which theſe ſeven caſes of intermitting fever were cured by the bark, clearly proves that fevers of the ſame ſeaſon differ very much, according to the nature of the exhalations which excite them. The intermittents in theſe ſtrangers were excited by miaſma of leſs force than that which was generated in our city, in which, from the greater heat of the atmoſphere, and the more heterogeneous nature of the putrid matters which ſtagnate in our ponds and gutters, the exhalation probably poſſeſſes a more active and

ſtimulating quality. Thus the mild remittents in June and in the beginning of July, which were produced by the uſual filth of the ſtreets of Philadelphia, in the year 1793, differed very much from the malignant remitting yellow fever which was produced by the ſtench of the putrid coffee a few weeks afterwards.

Sir John Pringle long ago taught the inefficacy of bark in certain bilious fevers. But Dr Chiſholm has done great ſervice to medicine by recording its ill effects in the Boullam fever. "Head ach, (ſays the Doctor) a heavy dull eye, with a conſiderable protruſion from its orbits, low ſpirits, thirſt, and a total want of appetite, were the general conſequences of the treatment with bark without the previous antiphlogiſtic."

I have mentioned a caſe of internal dropſy of the brain having been produced by the improper uſe of the bark in a ſon of Mr. Coates. I have no doubt but this diſorder, as alſo palſy, and conſumption, obſtructions of the liver and bowels, and dropſies of the belly and limbs, are often induced by the uſe of the bark during an inflammatory ſtate of the blood-veſſels. It is to be lamented that the aſſociation of certain diſeaſes and remedies in the minds of phyſicians, becomes ſo fixed, as to refuſe to yield

to

to the influence of reaſon. Thus pain and opium, dropſy and foxglove, low ſpirits and aſſafœtida, and above all, an intermitting fever and bark, are all connected together in common practice as mechanically, as the candle and the ſnuffers are in the mind of an old and ſteady houſe ſervant. To aboliſh the miſchief of theſe mechanical aſſociations in medicine, it will be neceſſary for phyſicians to preſcribe only for the different ſtates of the ſyſtem.

Finding the bark to be ſo univerſally ineffectual or hurtful, I ſubſtituted Columbo root, the Carribean bark and ſeveral other bitters in its place, but without ſucceſs. They did leſs harm than the Jeſuit's bark, but they did not check the return of a ſingle paroxyſm of fever.

I know that bark was given in this fever in ſome inſtances in which the patients recovered; but they were ſubject during the winter, and in the following ſpring, to frequent relapſes, and in ſome inſtances to affections of the brain and lungs. In the higheſt grade of the fever it certainly accelerated a ſuppoſed putrefaction of the blood, and precipitated death. The practice of phyſicians who create this gangrenous ſtate of fever by means of the bark, reſembles the conduct of a horſe, who attempts by pawing to

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remove his ſhadow in a ſtream of water, and thereby renders it ſo turbid that he is unable to drink it.

Should the immediate ſucceſs of tonic, and depleting remedies in deſtroying the fever be equal, the effects of the former upon the conſtitution cannot fail of being leſs ſafe than the latter remedies. They cure by overſtraining the powers of life. There is the ſame difference therefore between the two modes of practice, that there is between gently lifting the latch of a door, and breaking it open in order to go into a houſe.

Wine was hurtful in every caſe of yellow fever in which it was given while there were any remains of inflammatory action in the ſyſtem. I recollect that a few ſpoonsful of it, which Mr. Harriſon of Virginia took in the depreſſed ſtate of his pulſe, excited a ſenſation in his ſtomach which he compared to a fire. Even wine-whey, in the excitable ſtate of the ſyſtem induced by this fever, was ſometimes hurtful. In a patient of Dr. Phyſick who was on the recovery, it produced a relapſe that had nearly proved fatal in the year 1795. Dr. Deſperrieres aſcribes the death of a patient to a ſmall quantity of wine given to him by a black nurſe.*

* Vol. II. p. 108.

Theſe

Theſe facts are important, inaſmuch as wine is a medicine which patients are moſt apt to uſe in all caſes, without the advice of a phyſician.

I obſerved OPIUM to be leſs hurtful in this fever than it was in the fever of 1793. I adminiſtered a few drops of laudanum, in one caſe in the form of a glyſter in a violent pain of the bowels, with evident advantage, before the inflammatory action of the blood veſſels was ſubdued. In this way I have often obtained the compoſing effects of laudanum where it has been rejected by the ſtomach. But I gave it ſparingly, and in ſmall doſes only, in the early ſtage of the fever. John Madge, whoſe pains in his bowels were often as exquiſite as they are in the moſt acute colic, did not take a ſingle drop of it. I uſed no anodyne in his caſe but bleeding, and applications of cold water to the inſide and outſide of his bowels. After the fever had paſſed the ſeventh day, and had been ſo far ſubdued by copious evacuations as to put on the form of a common inflammatory intermittent, I gave laudanum during the intermiſſions of the fever with great advantage. In ſome caſes, it ſuddenly checked the paroxyſms of the fever, while in many more it only moderated them, but in ſuch a manner, that they wore themſelves away in eight or ten days. One of my female patients who had taken bitters of every kind, with-

out effect to cure a tertian which ſucceeded a yellow fever, took a large doſe of laudanum in the interval of her paroxyſms to cure a tooth ach. To her great ſurpriſe it removed her tertian. The effects of laudanum in this fever were very different from thoſe of bark. Where it did no ſervice, it did not, like the bark do any harm.

Perhaps this difference in the operation of thoſe two medicines depended upon the bark acting with an aſtringent, as well as ſtimulating power chiefly upon the blood veſſels, while the action of the opium was more ſimply ſtimulating, and diffuſed at the ſame time over all the ſyſtems of the body.

I ſhall ſay in another place that I ſometimes directed a few drops of laudanum to be given in that ſtate of extreme debility which ſucceeds a paroxyſm of fever, with evident advantage.

NITRE, ſo uſeful in common inflammatory fevers, was in moſt caſes ſo offenſive to the ſtomach in this fever, that I was ſeldom able to give it. Where the ſtomach retained it, I did not perceive it to do any ſervice.

ANTIMONIALS were as ineffectual as nitre in abating the action of the ſanguiferous ſyſtem, and in producing

producing a ſweat. I ſhould as ſoon expect to compoſe a ſtorm by muſic, as to cure a yellow fever by ſuch feeble remedies.

Thus have I finiſhed the hiſtory of the ſymptoms, origin, and cure of the yellow fever as it appeared in Philadelphia in 1794 and in the winter of 1795. The efficacy of the remedies which have been mentioned, was eſtabliſhed by almoſt univerſal ſucceſs. Out of upwards of 200 patients to whom I was called in the firſt ſtage of the fever between the 12th of June 1794 and the firſt of April 1795, I loſt but four perſons in whom the unequivocal ſymptoms had occurred, which characteriſe the firſt grade of the diſeaſe.

It will be uſeful, I hope, to relate the caſes of the patients whom I loſt, and to mention the cauſes of their deaths. The firſt of them was Mrs. Gavin. She objected to a fifth bleeding in the beginning of a paroxyſm of her fever, and died from the want of it. Her death was aſcribed to the frequency of her bleedings by the enemies of the depleting ſyſtem. It was ſaid that ſhe had been bled ten times, owing to ten marks of a lancet having been diſcovered on her arms after death, five of which were occaſioned by unſucceſsful attempts to bleed her. She died with the uſual ſymptoms of congeſtion in her brain.

Mr. Marr, to whom I was called on the firſt day of his diſorder, died in a paroxyſm of his fever which came on in the middle of the 7th night, after ſix bleedings. I had left him the night before nearly free of fever, and in good ſpirits. He might probably have been ſaved, (humanly ſpeaking) by one more bleeding in the exacerbation of what appeared to be the critical paroxyſm of his fever.

Mr. Montford of the State of Georgia died under the joint care of Dr. Phyſick and myſelf. He had been cured by plentiful bleeding, and purging, but had relapſed. He appeared to expire in a fainty fit in the firſt ſtage of a paroxyſm of the fever. Death from this cauſe (which occurs moſt frequently where bloodletting is not uſed) is common in the yellow fever of the Weſt Indies. Dr. Biſſet in deſcribing the different ways in which the diſeaſe terminates fatally ſays. "In a few caſes, the patient is carried off by an *unexpected ſyncope.*" *

A ſervant of Mr. Henry Mitchell, to whom I was called in the early ſtage of his diſorder, died in conſequence of a ſudden effuſion in his lungs which had been weakened by a previous pulmonary complaint.

*. Medical Eſſays and Obſervations, p. 28.

I wiſh

I wish the friends of bark and wine in the yellow fever, or of *moderate* bleeding with antimonial medicines, would publish an account of the number of their deaths by the fever, within the period I have mentioned, and with the same fidelity I have done. The contrast would for ever decide the controversy in favour of copious depletion. The mortality under the tonic mode of practice may easily be conceived from the acknowledgement of one of the gentlemen who used it, but who premised it, in many cases, by two and three bleedings. He informed Dr. Woodhouse that out of twenty-seven patients whom he had attended in the yellow fever, he had saved but nine. Other practitioners were, I believe, equally unsuccessful in proportion to the number of patients whom they attended. The reader will not admit of many deaths having occurred from the diseases (formerly enumerated) to which they were ascribed, when he recollects that even a single death from most of them, in common seasons, is a rare occurrence in the practice of regular bred physicians.

In answer to the account I have given of the mortality of the fever in 1794, it will be said, that 30 persons died less in that year, than in the healthy year of 1792. To account for this, it will be necessary to recollect that the inhabitants of Philadelphia

phia were reduced in number upwards of 4000, in the year 1793 and of courſe that the proportion of deaths was greater in 1794 than it was in 1792 although the number was leſs. It is remarkable that the burials in the ſtrangers' grave yard amounted in the year 1792 to but 201, whereas in 1794 they were 676. From this it appears, that the deaths muſt have been very numerous among new comers (as they are ſometimes called) in the year 1794 compared with common years. Now this will eaſily be accounted for when we recollect, that theſe people who were chiefly labourers, were expoſed to the conſtantly exciting cauſes of the diſeaſe, and that in all countries they are the principal ſufferers by it.

But in order to do juſtice to this comparative view of the mortality induced by the yellow fever in the year 1794, it will be neceſſary to examine the bill of mortality of the ſucceeding year. By this it appears that 2274 perſons died in 1795, making 1139 more than died in 1794. The greatneſs of this mortality, I well recollect, ſurprized many of the citizens of Philadelphia who had juſt paſſed an autumn which was not unuſually ſickly, and who had forgotten the uncommon mortality of the months of January, February and March, which ſucceeded the autumn of 1794.

It

It will probably be aſked, how it came to paſs, that I attended ſo many more patients in this fever than any of my brethren. To this I anſwer, that ſince the year 1793 a great proportion of my patients have conſiſted of ſtrangers, and of the poor; and as they are more expoſed to the diſeaſe than other people, it follows, that of the perſons affected by the fever, a greater proportion muſt have fallen to my ſhare as patients, than to other phyſicians. My ability to attend a greater number of patients than moſt of my brethren, was facilitated by my having at the time of the fever, ſeveral ingenious and active pupils, who aſſiſted me in viſiting and preſcribing for the ſick. Theſe pupils were, Aſhton Alexander (now phyſician at Baltimore), John Otto, Nathaniel Potter (now phyſicians in Philadelphia), and Gilbert Watſon.

The antiphlogiſtic remedies were not ſucceſsful in Philadelphia, in the yellow fever, in my hands alone. They were equally, and perhaps more ſo, in the hands of my friends Dr. Griffitts, Dr. Phyſick, Dr. Dewees, and Dr. Woodhouſe.

They were moreover ſucceſsful at the ſame time in New Haven, Baltimore, and in Charleſton in South Carolina. Eighteen out of twenty died of all who took bark and wine in New Haven, but only

only one in ten, of thoſe who uſed the depleting medicines. In a letter from Dr. Brown, a phyſician of eminence in Baltimore, dated November 27th, 1794, he ſays, "of the many caſes which fell to my care, two only proved mortal where I was called on the firſt day of the diſeaſe, and had an uncontrouled opportunity to follow my judgment. Where ſalivation took place, I had no caſe of mortality; and in two of thoſe caſes a black vomiting occurred." Dr. Ramſay of Charleſton, in a letter to one of his friends in this city, dated October 14th, 1794, ſubſcribes to the efficacy of the ſame practice in a fever which prevailed at that time in Charleſton, and which, he ſays, reſembled the yellow fever of Philadelphia in the year 1793.

But the ſucceſs of the depleting ſyſtem was not confined to the United States. In a letter before quoted, which I received from Dr. Davidſon of St. Vincents, dated July 22d, 1794, there is the following teſtimony in favour of evacuations from the blood-veſſels, bowels, and ſalivary glands.

"Where the fever comes on with great determination to the head, and an affection of the ſtomach, in conſequence of that determination, violent head ach, redneſs of the eyes, turgeſcence of the face, impatience of light, &c. attended with a full

a full and hard pulſe, *blood-letting* ſhould be employed *freely* and *repeatedly*, cold applications ſhould be applied to the head, and purging medicines ſhould be employed. As a purge, *calomel* has been uſed with the greateſt advantage, ſometimes by itſelf, but moſt frequently combined with ſome active purgative medicine, ſuch as jalap. From ſome peculiarity in the diſeaſe, an uncommon quantity of the calomel is neceſſary to affect the bowels and ſalivary glands. As I found a ſmall quantity of it did not produce the effect I wiſhed for promptly, I have gradually increaſed the quantity, until I now venture to give *ten* grains of it, combined with five of jalap, every *two* hours until ſtools are procured. The calomel is then given by itſelf.

"The patients have generally an averſion to wine. The bark is ſeldom found of much advantage in this ſtate of the fever, and frequently brought on a return of the vomiting. I preferred to it, in a remiſſion of the ſymptoms, a vinous infuſion of the quaſſia, which ſat better upon the ſtomach."

In the iſland of Jamaica, the depleting ſyſtem has been divided. It appears from ſeveral publications in the Kingſton papers, that Dr. Grant had adopted blood-letting, while moſt of the phyſicians

of

of the iſland reſt the cure of the yellow fever upon ſtrong mercurial purges. The ill effects of *moderate* bleeding appear to have thrown the lancet into diſrepute; and the balance of ſucceſs, from thoſe publications, is evidently in favour of ſimple purging. I have no doubt of the truth of the above ſtatement of the controverſy between the excluſive advocates for bleeding and purging; and I think the ſuperior efficacy of the latter remedy may be explained in the following manner.

In warm climates the yellow fever is generally, as it was in Philadelphia in the month of Auguſt and in the beginning of September 1793, a diſeaſe of but two or three paroxyſms. It is ſometimes, I believe, only a ſimple ephemera. In theſe caſes, purging alone is ſufficient to reduce the ſyſtem, without the aid of bleeding. It was found to be ſo, until the beginning of September in 1793, in moſt caſes in Philadelphia. The extreme depreſſion of the ſyſtem in the yellow fever in warm weather and in hot climates, renders the reſtoration of it to a healthy ſtate of action more gradual, and of courſe more ſafe, by means of purging, than bleeding. The latter remedy does harm, only by reſtoring the blood-veſſels too ſuddenly to preternatural action, without reducing them afterwards. Had bleeding been practiſed agreeably to the method

thod deſcribed by Riverius, (mentioned in a former publication *), or had the fever in Jamaica run on to more than four or five paroxyſms, I am ſure the loſs of blood would have been not only ſafe, but generally beneficial. I have, in another place, † given my reaſons why *moderate* bleeding in this, as well as many other diſeaſes, does harm. In thoſe caſes where it has occurred in large quantities from natural hæmorrhages, it has always done ſervice in the Weſt Indies. The inefficacy, and in ſome caſes, the evils, of *moderate* blood-letting are not confined to the yellow fever. It is equally ineffectual, and in ſome inſtances equally hurtful, in apoplexy, internal dropſy of the brain, pleuriſy, and pulmonary conſumption. Where all the different ſtates of the pulſe which indicate the loſs of blood are perfectly underſtood, and blood-letting conformed in *time* and in *quantity* to them, it never can do harm in any diſeaſe. It is only when it is preſcribed empirically, without the direction of juſt principles, that it has ever proved hurtful. Thus the fertilizing vapors of heaven, when they fall only in dew, or in profuſe ſhowers of rain, are either inſufficient to promote vegetation, or altogether deſtructive to it.

There may be habits in which great and long protracted debility, whether direct or indirect, may

* Account of the Yellow Fever in 1793. † Ibidem.

have

have so far exhausted the active powers of the system, as to render bleeding altogether improper in this disease, in a West India climate. Such habits are sometimes produced in soldiers and sailors by the hardships of a military and naval life. Bleeding in such cases, Dr. Davidson assures me in a letter dated from Martinique, February 29th, 1796, did no good. The cure was effected under these circumstances by purges, and large doses of calomel. But where this chronic debility does not occur, bleeding, when properly used, can never be injurious, even in a tropical climate, in the yellow fever. Of this there are many proofs in the writings of the most respectable English and French physicians. In spite of the fears and clamors which have been lately excited against it in Jamaica, my late friend and cotemporary at the college of Edinburgh, Dr. Broadbelt, in a letter from Spanish Town, dated January 6th, 1795, and my former pupil Dr. Weston, in a letter from St. Ann's Bay, dated June 17th, 1795, both assure me that they have used it in this fever with great success. Dr. Weston says that he bled "*copiously* three times in 24 hours, and thereby saved his patient."

Dr. Chisholm has lately endeavoured to rest the cure of malignant fevers wholly upon the evacuation obtained from the salivary glands, by means of

 mercury.

mercury. I have no doubt of the efficacy of the Doctor's practice, but from his own account it was much less successful than the practice in the United States has been, from the combined operation of bleeding, purging, and a salivation. From the description which the Doctor has given of the state of the pulse, of the frequent hæmorrhages which occurred in the Boullam fever, and of the state of the brain after death, I am satisfied that bleeding and purging would have rendered his practice much more successful. Notwithstanding the Boullam fever was highly inflammatory, it was materially different from the yellow fever of the West Indies and of the American States. This appears 1. From its origin, it having been produced by human miasmata in an African vessel which arrived at Grenada, and not by marsh exhalation. 2. From its being contagious in the West Indies, which Dr. Chisholm says is never the case with the yellow fever *. 3. From its infecting at the distance of but 6, 8, or 10 feet; whereas the yellow fever infects at the distance of 20 and 30 feet. 4. From the yellow fever, and a fever composed of the combined contagions of the Boullam and yellow fevers, prevailing at the same time in Grenada.

* P. 147.

I ſay nothing of the difference of the ſymptoms in the two fevers, for this depends upon circumſtances purely accidental. In both, the contagion acts like other violent and general ſtimuli, which all produce nearly the ſame effects upon the ſyſtem.

From Dr. Chiſholm being unacquainted at the time he compoſed his book, with the hiſtory of the yellow fever of Philadelphia in the year 1793, he has aſſerted that it was the ſame diſeaſe that prevailed at Grenada, and that it had been conveyed from that iſland to Philadelphia. The aſſertion furniſhed a ſhort lived triumph to ſome of the phyſicians of Philadelphia; but the facts which I have mentioned from the Doctor's book, ſoon ſhewed it to be without the leaſt foundation.

The ſuperior advantages of the North American mode of treating the yellow fever by means of *all* the common antiphlogiſtic remedies, will appear from comparing its ſucceſs, with that of the Weſt India phyſicians, under all the modes of practice which have been adopted in the iſlands. Dr. Deſportes loſt one half of all the patients he attended in the yellow fever in one ſeaſon in St. Domingo. * His remedies were *moderate* bleeding, and purging, and the copious uſe of diluting drinks. Dr Biſſet

* Vol. I. p. 55.

 ſays,

ſays, "the yellow fever is often under particular circumſtances very fatal, carrying off four or five in ſeven whom it attacks, and ſometimes, but ſeldom, it is ſo favourable, as to carry off only one patient in five or ſix." * The Doctor does not deſcribe the practice under which this mortality takes place.

Dr. Home, I have elſewhere remarked,† loſt "one out of four of his patients in Jamaica. His remedies were *moderate* bleeding, and purging, and afterwards bark, wine, and external applications of blankets dipped in hot vinegar.

Dr. Blane pronounces the yellow fever to be "one of the moſt fatal diſeaſes to which the human body is ſubject, and in which human art is the moſt unavailing." His remedies were bleeding, bark, bliſters, acid drinks, ſaline draughts, and camomile tea.

Dr. Chiſholm acknowledges that he loſt one in twelve of all the patients he attended in the jail fever. His principal remedy was a ſalivation. I ſhall hereafter ſhew the inferiority of this ſingle mode of depleting, to a combination of it with bleeding and purging. In Philadelphia, and Baltimore where bleeding, purging, and ſalivation were uſed

* Medical Eſſays and Obſervations, p. 29.

† Account of the yellow fever in 1793.

in due time, and after the manner that has been deſcribed, not more than one in fifty died of the yellow fever. It is probable that greater certainty and ſucceſs in the treatment of this diſeaſe, will not eaſily be attained, for idioſyncracy, and habits of intemperance which reſiſt or divert the operation of the moſt proper remedies, a dread of the lancet, or the delay of an hour in the uſe of it, the partial application of that or any other remedy, the unexpected recurrence of a paroxyſm of fever in the middle of the night, or the clandeſtine exhibition of wine or laudanum by friends, or neighbours, often defeat the beſt concerted plans of cure by a phyſician. Heaven in this, as in other inſtances, kindly limits human power, and benevolence, that in all ſituations man may remember his dependence upon the power and goodneſs of his Creator.*

* An innate dread of the lancet, deprived the world prematurely, of the talents and virtues of William Bradford Eſq. Attorney General of the United States, on the 23d of Auguſt 1795. He refuſed to ſubmit to bleeding in a malignant bilious fever for five days, during which time ſuch effuſions took place, as rendered that, and other remedies ineffectual in his caſe. I ſhall long, very long, mourn the death of this excellent man. He was to me a friend and a brother. The delay of bleeding for one night only, during a ſevere paroxyſm of the ſame ſtate of fever, deprived me of a beloved pupil Mr. Gilbert Watſon on the 25th of September of the ſame year. He caught it by the moſt extraordinary exertions

This victory incomplete as it is, over a diſeaſe, once the terror and ſcourge of mankind, has not been a cheap one. It has been purchaſed at the expenſe of much labour and obloquy. The number of the perſons who have died under my care, has been much exaggerated, and the moſt affecting ſtories have been circulated of their dying under the immediate uſe of my remedies. A ſingle death where bleeding had been uſed without ſucceſs, has injured my reputation more than twenty deaths created by the neglect of it, or by the improper uſe of tonic remedies, have injured other phyſicians. Nay, further, the paleneſs which is induced by bleeding, has in a ſingle inſtance, been urged with more ſucceſs to diſcredit my practice, than a dozen deaths would have been, had I confined myſelf to the uſual remedies for fever. The reader will conceive of the horror with which my practice of bleeding in this fever is viewed, when I add, that a lady who viſited one of my female patients whom I had bled ſeveral times, implored her upon her knees not to permit me to bleed her any more. Her prayer had no effect. I bled her frequently afterwards, but that ſhe might not be diſturbed by a repetition of the entreaties of her friend, I concealed

exertions of ſkill and humanity in attending and nurſing a ſick family, on the Delaware, about 20 miles from Philadelphia.

the blood, at her requeſt, each time after drawing it in a cloſet, nor was it known that I did ſo, until ſome time after her recovery.

I commit the calumnies which have followed my opinions and practice in this fever, to the duſt. If the ſoil, I have endeavoured to cultivate, ſhould afford a plentiful harveſt to my pupils, I ſhall not repine, although I have reaped nothing from it, but briars and thorns. And if my labours upon this ſubject ſhould be bleſſed to the conviction and benefit of the citizens of Philadelphia, I ſhall rejoice in my perſecutions.

To that BEING who often makes uſe of weak and unworthy inſtruments to accompliſh the purpoſes of his benevolence, in order thereby to fix the gratitude of his creatures upon his own almighty power and goodneſs, I deſire thus publicly to record my acknowledgments for having made me in the ſmalleſt degree uſeful to my fellow men in any part of the world, by the revival and application of remedies which have ſubdued, in a great meaſure, the force of a once formidable and mortal diſorder. To his great and holy name be aſcribed honor, and power, and glory, by all his intelligent creatures, for ever, and ever.

AN

INQUIRY

INTO THE

PROXIMATE CAUSE

OF

FEVER.

AN

INQUIRY, &c.

HAVING yielded to the ſolicitations of my pupils to publiſh a defence of blood-letting in certain diſeaſes, I found that I could not do juſtice to the ſubject, as it relates to the cure of fevers, without firſt delivering a few obſervations upon that ſtate of the blood-veſſels, which conſtitutes the proximate cauſe of fever. I ſhall therefore proceed briefly to deliver the ſubſtance of what I have taught for ſeveral years upon this ſubject in the Univerſity of Pennſylvania, and what has, for many years, regulated my practice in the treatment of fevers.

Previouſly to my entering upon this ſubject, I ſhall give a ſhort account of the changes which I have made in my opinions upon it. My firſt principles in medicine were derived from Dr. Boerhaave, and from his aphoriſms as explained by Vanſwieten, I adopted my firſt ideas of fever.

The

The reader may eaſily conceive of the pains I took to become maſter of this ſubject, when I add, that before I was twenty years of age, I abridged all thoſe volumes of Vanſwieten's Commentaries on Dr. Boerhaave's aphoriſms which treat of fever. I need hardly add, that Dr. Boerhaave placed its proximate cauſe wholly in a lentor of the blood, and in morbific matter.

When I went to Edinburgh in the year 1766, I relinquiſhed this theory of fever, and embraced a more rational one, firſt propoſed by Dr. Hoffman, and afterwards revived with many advantages by Dr. Cullen, I mean the theory of a ſpaſm upon the extremities of the capillary veſſels in every part of the ſurface of the body. Soon after my ſettlement in Philadelphia in the year 1769 I found that this theory did not accord with many of the phenomena of fever. I was therefore forced to deſert it; and for many years I floundered upon an ocean of doubt and uncertainty with reſpect to the proximate cauſe of fever. Many painful hours have I ſpent in contemplating this ſubject. At length light broke in upon my mind. The phenomena of fever ſuddenly appeared to me in a new order. I inſtantly combined them into a new theory. Whether this theory be juſt, or not, time muſt diſcover. Since I have adopted it, my practice in fevers has been more ſimple,

ple, and far more ſucceſsful than formerly. It has moreover thrown a light upon the proximate cauſe of ſeveral other diſeaſes, and led to a practice equally ſimple and ſucceſsful in them. I feel no ſhame in thus publicly acknowledging that I have more than once changed my opinions in medicine. To be unchangeable, belongs only to that being who ſees things in their order and relation to each other by a ſingle act of intuition. A change in opinions is the neceſſary effect of ſucceſſion in the acquiſition of knowledge, and I believe a new truth is ſeldom acquired by men of common education, but at the expence of an old error.

I ſhall not attempt to give a definition of fever. It appears in ſo many different forms, that a juſt view of it can only be given in a minute detail of all its ſymptoms and ſtates.

In order to render the theory of fever, which I am about to deliver, more ſimple and intelligible, it will be neceſſary to premiſe a few general propoſitions.

I. Fevers of all kinds are preceded by general debility. This debility is of two kinds, viz. direct and indirect. The former depends upon an abſtraction of uſual and natural ſtimuli; the latter upon

upon an increaſe of natural, or upon the action of preternatural ſtimuli upon the body. However oppoſite theſe cauſes of debility may be, they unite in their effects, and that in ſuch a manner, that direct and indirect debility are frequently to be diſtinguiſhed, only by a knowledge of the cauſes which induce them.

That fevers are preceded by general debility, I infer from their cauſes. Theſe act directly or indirectly on the ſyſtem. I ſhall firſt mention thoſe cauſes of fever which act by inducing *direct*, and afterwards thoſe which act by inducing *indirect* debility.

The former are,

1. Cold. This is univerſally acknowledged to be a prediſpoſing cauſe of fever. That it debilitates, I infer, 1. From the languor which is obſerved in the inhabitants of cold countries; and from the weakneſs which is felt in labour or exerciſe in cold weather. 2. From the effects of experiments, which prove, that cold air and cold water leſſen the force and frequency of the pulſe.

The other cauſes of direct debility which prediſpoſe to fever are,

2. The

2. The debilitating paſſions of fear, grief, and deſpair.

3. All exceſſive evacuations, whether by the bowels, blood-veſſels, pores, or urinary paſſages.

4. Famine, or the abſtraction of the uſual quantity of nouriſhing food.

The cauſes which prediſpoſe to fever by inducing *indirect* debility are,

1. Heat. Hence the greater frequency of fevers in warm climates and in warm weather.

2. Intemperance in eating and drinking.

3. Fatigue.

4. Certain cauſes which act by over-ſtretching a part or the whole of the body, ſuch as lifting heavy weights, external violence acting mechanically in wounding, bruiſing, or compreſſing particular parts, extraneous ſubſtances acting by their bulk or gravity, burning, and the like. * Some of theſe cauſes act locally, but they affect the ſyſtem ſecondarily by

* Cullen's Firſt Lines.

inducing

inducing in it indirect debility. I infer further, that fevers depend upon predisposing debility from the *time* in which they most commonly attack, viz. in the night, when the system is in a state of debility; and from the symptoms which accompany the attack of a fever, such as weakness in the limbs, inability to stand or walk, coldness or chills, sleepiness, a shrinking of the hands and face, and a weak or quick pulse.

In answer to this general proposition it may be said, that contagions, whether of the small-pox or measles, act without the predisposition of debility; and that this predisposition is not necessary to produce a fever from the contagions of the plague or yellow fever. To this I reply, that none of those contagions act so as to produce fever, until they have first induced indirect debility; and that their action is more speedy, certain, and violent in proportion to the degrees of direct or indirect debility which have preceded them. This is so well known, that the safety or fatal issue of fevers from contagion is generally expected, from their having been preceded by more or less of the enumerated causes of direct or indirect debility.

II. Debility is always succeeded by increased excitability, or a greater aptitude to be acted upon by

by ſtimuli. This increaſe of excitability is ſaid by Dr. Brown to be confined only to a ſtate of direct debility, but it takes place in all caſes of indirect debility; where it is *ſuddenly* induced upon the ſyſtem. Indirect and direct debility are upon a footing, where they are of a chronic nature. They both equally expend the excitability of the ſyſtem, and leave it in a ſtate in which ſtimuli generally act with too little force upon it to excite in it the commotions of fever.

III. The diminution or abſtraction of one ſtimulus is always followed by the increaſed action of others.

Let us apply theſe principles, before we loſe ſight of them, to the production of fever.

Has the body been debilitated by long expoſure to the cold air?—its excitability is thereby increaſed, and heat acts upon it with an accumulated force; hence the frequency of catarrhs, pleuriſies, and other inflammatory fevers in the ſpring, after a cold winter; and of bilious remittents in the autumn, when warm days ſucceed to cold and damp nights. Theſe diſeaſes are ſeldom felt for the firſt time in the open air, but generally after the body has been expoſed to cold, and afterwards to the heat of a warm room or a warm bed. Mild intermittents

tents have frequently been obſerved to acquire an inflammatory type in the Pennſylvania hoſpital, in the months of November and December, from the heat of the ſtove rooms acting upon bodies previouſly debilitated by cold and diſeaſe.

Has there been an abſtraction of heat by a ſudden ſhifting of the wind from the ſouth-weſt to the north-weſt or north-eaſt points of the compaſs, or by a cold night ſucceeding to a warm day?—a fever is thereby frequently excited. Theſe ſources of fever occur every autumn in Philadelphia. The miaſmata or contagion which exiſt in the body at that time in a harmleſs ſtate, are excited into action by the debility from cold, aided in the latter caſe by the inaction of ſleep ſuddenly induced upon the ſyſtem.

Again: Has the body been ſuddenly debilitated by fatigue?—its excitement is thereby diminiſhed, but its excitability is increaſed in ſuch a manner that the ſtimulus of a full meal, or an intemperate glaſs of wine, if taken immediately after the fatigue is induced upon the body, excites a fever; hence the frequency of fevers in perſons upon their return from hunting, ſurveying, long rides, or from a camp life. A fever from the laſt cauſe, was very common during the late war in America. A hot ſupper, and afterwards the heat of a warm bed, ſometimes

times induced not only fever, but a convulsion in the nervous system in many persons the night after they returned from the coarse diet of the camp, and from sleeping upon an earthen or wooden floor. Many other instances might be mentioned of fever being brought on by ordinary stimuli, acting upon increased or accumulated excitability.

This connection of excitability with debility, has lately been pointed out by the French physicians by the terms "laxitè vibratile," by which they mean a liableness in the system to be thrown into vibrations or motions by the predispoſition of debility.

That this vibratility, or disposition to preternatural motion in animal matter, is the predisposing cause of fevers, is evident from their occurring in those stages of life in which it is most common, as in infancy, childhood, youth, and middle life. Fevers are less common in old age, for the vibratility of the sanguiferous system, in which I shall presently say the proximate cause of *ordinary* fever is seated, generally declines in old people. It even lessens in the skin, as appears by contracting it for half a minute between the fingers.

IV. The stimuli which are the remote or exciting causes of fever, act in a manner wholly different

from what they do, upon a body in which there is no prediſpoſition to fever. In health there is a conſtant and juſt proportion between the degrees of excitement and excitability, and the force of ſtimuli. But this is not the caſe in a prediſpoſition to a fever. The ratio between the action of ſtimuli and excitement, and excitability is deſtroyed; and hence the former act upon the latter with a force which produces irregular action, or a convulſion in the arterial ſyſtem. When the body is debilitated, and its excitability increaſed, either by fear, darkneſs, or ſilence, a ſudden noiſe occaſions a ſhort convulſion. We awake in like manner in a light convulſion, from the ſudden opening of a door, or from the ſprinkling of a few drops of water in the face, after the excitability of the ſyſtem has been accumulated by a night's ſleep. In a word, it ſeems to be a law of the ſyſtem that ſtimulus, in an over-proportion to excitability, either produces convulſion, or goes ſo far beyond it, as to deſtroy motion altogether in death.

V. The ſtimuli which induce the irregular action or convulſion of fever, act, for the moſt part, primarily upon the ſanguiferous, and particularly upon the arterial ſyſtem. The arteries pervade every part of the body. They terminate on every part of its ſurface, in which I include the lungs and alimentary

mentary canal, as well as the ſkin. It is from this circumſtance that they are ſo eaſily affected by cold, heat, and all the other remote and exciting cauſes of fever. I need not pauſe to prove that the blood-veſſels poſſeſs muſcular fibres, and that their irritability, or diſpoſition to motion, depends upon them. This has been demonſtrated by Dr. Vaſſchuer and Mr. John Hunter by many experiments. Dr. Boerhaave admits it in the hiſtory he has given in his Inſtitutes, of an ox that was killed immediately after it had been violently heated by running away. The coats of its arteries were ſuffuſed with blood, in conſequence of inflammation. Even Dr. Haller, who denies the muſcularity and irritability of the blood-veſſels, implies an aſſent to them in the following words: "There are nerves which deſcend for a long way together through the ſurface of the artery, and at laſt vaniſh in the cellular ſubſtance of the veſſel, of which we have a ſpecimen in the external and internal carotids, and in the arch of the aorta; and from theſe do not the arteries ſeem to derive a muſcular and convulſive force very different from that of their ſimple elaſticity? Does not this ſhew itſelf plainly in *fevers*, faintings, palſies, conſumption, and paſſions of the mind?" *

* Firſt Lines, § 32. of the chapter on the Arteries.

The morbid action of the blood-veſſels diſcovers itſelf in preternatural force or frequency in the pulſations of the arteries. In this ſtate of the arteries, the ſtomach, bowels, and muſcles exhibit marks of preternatural weakneſs, for natural excitement is abſtracted from them, and concentrated in the ſanguiferous ſyſtem.

VI. There is but one remote cauſe of fever, and that is ſtimulus. Heat, alternating with cold, * marſh and human miaſmata, contagions and poiſons of all kinds, intemperance, paſſions of the mind, bruiſes, burns, and the like, all act by a ſtimulating power only, in producing fever. This propoſition is of great application, inaſmuch as it cuts the ſinews of the diviſion of diſeaſes from their remote cauſes. Thus it eſtabliſhes the ſameneſs of a pleuriſy, whether it be excited by heat ſucceeding cold, or by the contagion of the ſmall-pox, meaſles, or yellow fever.

VII. There is but one fever. However different the prediſpoſing, remote, or exciting cauſes of fever

* Dr. Sydenham aſcribes nearly all fevers to this cauſe, particularly to leaving off winter clothes too ſoon, and to expoſing the body to cold after it has been heated. Theſe two ſources of fever, he adds, deſtroy more than the plague, ſword, or famine.

Wallis's Edition, Vol. I. p. 357.

may

may be, whether direct or indirect debility, whether heat or cold succeeding to each other, whether marsh or human miasmata, whether intemperance, a fright, or a fall, still I repeat, there can be but one fever. I found this proposition upon all the supposed variety of fevers having but one proximate cause. Thus fire is an unit, whether it be produced by friction, percussion, electricity, fermentation, or by a piece of wood or coal in a state of inflammation.

VIII. All ordinary fever being seated in the blood-vessels, it follows of course, that all those local affections we call pleurisy, angina, phrenitis, internal dropsy of the brain, pulmonary consumption, and inflammation of the liver, stomach, bowels, and limbs, are symptoms only of an original and primary disease in the sanguiferous system. The truth of this proposition is obvious, from the above local affections succeeding primary fever, and from their alternating so frequently with each other. I except from this remark those cases of primary affections of the viscera which are produced by local injuries, and which, after a while, bring the whole sanguiferous system into sympathy. These cases are uncommon, amounting probably to not more than one in a hundred of all the cases of local affection which occur in general fever.

Having premiſed theſe general propoſitions, I go on to remark, that a fever (when not miſplaced) conſiſts in a morbid excitement and irregular action in the blood-veſſels, more eſpecially in the arteries. This morbid excitement, or irregular action, manifeſts itſelf to the fingers, when preſſed upon the radial artery, by preternatural fulneſs, force, and frequency, or by preternatural ſlowneſs, intermiſſions and depreſſion in what are called inflammatory fevers, and by preternatural frequency without fulneſs or force, in what are called typhus fevers.

I have called the action of the arteries *irregular* in fever, to diſtinguiſh it from that exceſs of action which takes place after violent exerciſe, and from that quickneſs which accompanies fear or any other directly debilitating cauſe. The action of the arteries here is *regular*, and when felt in the pulſe, affords a very different perception to the mind from that which we feel in the pulſe of a patient labouring under a fever.

This irregular action is in other words, a CONVULSION in the ſanguiferous, but more obviouſly, in the arterial ſyſtem.

That this is the caſe I infer from the ſtrict analogy between ſymptoms of fever, and convulſions in the nervous

nervous ſyſtem. I ſhall briefly mention the particulars in which this analogy takes place.

1. Are convulſions in the nervous ſyſtem preceded by debility? So is the convulſion of the blood-veſſels in fever.

2. Does debility induced on the whole, or on a part only, of the nervous ſyſtem, prediſpoſe to general convulſions, as in tetanus? So we obſerve debility, whether it be induced on the whole or on a part of the arterial ſyſtem, prediſpoſes to general fever. This is obvious in the fever which enſues alike from cold applied to every part of the body, or from a ſtream of cold air falling upon the neck, or from the wetting of the feet.

3. Do tremors precede convulſions in the nervous ſyſtem? So they do the convulſion of the blood-veſſels in fever.

4. Is a coldneſs in the extremities a precurſor of convulſions in the nervous ſyſtem? So it is of fever.

5. Do convulſions in the nervous ſyſtem impart a jerking ſenſation to the fingers? So does the con-

vulſion of fever in the arteries, when felt at the wriſts.

6. Are convulſions in the nervous ſyſtem attended with alternate action and remiſſion? So is the convulſion of fever.

7. Do convulſions in the nervous ſyſtem return at regular and irregular periods? So does fever.

8. Do convulſions in the nervous ſyſtem, under certain circumſtances, affect the functions of the brain? So do certain ſtates of fever.

9. Are there certain convulſions in the nervous ſyſtem which affect the limbs, without affecting the functions of the brain, ſuch as tetanus, and chorea ſancti Viti? So there are certain fevers, particularly the common hectic, which ſeldom produces delirium or even head ach, and frequently does not confine a patient to his bed.

10. Are there local convulſions in the nervous ſyſtem, as in the hands, feet, neck, and eye-lids? So there are local fevers. Intermittents often appear in the autumn with periodical heat and pains in the eyes, ears, jaws, and back.

11. Are

11. Are there certain grades in the convulſions of the nervous ſyſtem, as appears in the hydrophobia, tetanus, epilepſy, hyſteria and, hypochondriaſis? So there are grades in fevers, as in the plague, yellow fever, ſmall-pox, rheumatiſm, and common remitting and intermitting fevers.

12. Are nervous convulſions moſt apt to occur in infancy? So are fevers.

13. Are perſons once affected with nervous convulſions, frequently ſubject to them through life? So are perſons once affected with fever. The intermitting fever often returns with ſucceſſive ſprings or autumns, and in ſpite of the bark, ſometimes continues for many years in all climates and ſeaſons.

14. Is the ſtrength of the nervous ſyſtem increaſed by convulſions? This is ſo evident, that it often requires four or five perſons to confine a delicate woman to her bed in a convulſive fit. In like manner the ſtrength of the arterial ſyſtem is increaſed in a fever. This ſtrength is great in proportion to the weakneſs of every other part of the body.

15. Do we obſerve certain nervous convulſions to affect ſome parts of the nervous ſyſtem more than others, or in other words, do we obſerve preternatural

ternatural ſtrength or excitement, to exiſt in one part of the nervous ſyſtem, while other parts of the ſame ſyſtem exhibit marks of preternatural weakneſs, or defect of excitement? We obſerve the ſame thing in the blood-veſſels in a fever. The pulſe at the wriſt is often *tenſe*, while the force of the heart is very much diminiſhed. A delirium often occurs in a fever from exceſs of excitement in the blood-veſſels of the brain, while the pulſe at the wriſt exhibits every mark of preternatural weakneſs.

16. Is there a rigidity of the muſcles in certain nervous diſeaſes, as in catalepſy? Something like this ſolſtice in convulſion occurs in that ſtate of fever in which the pulſe beats but 60, or fewer ſtrokes in a minute.

17. Do convulſions go off *gradually* from the nervous ſyſtem, as in tetanus, and chorea ſancti Viti? So they do from the arterial blood-veſſels in certain ſtates of fever.

18. Do convulſions go off *ſuddenly* in any caſes from the nervous ſyſtem? The convulſion in the blood-veſſels, goes off in the ſame manner by a ſweat, or by an hæmorrhage, frequently in the courſe of a night, and ſometimes in a ſingle hour.

19. Does

19. Does palſy in ſome inſtances ſucceed to convulſions in the nervous ſyſtem? Something like a palſy occurs in the blood-veſſels in fevers of great inflammatory action. I ſhall hereafter aſcribe the diſſolved appearance of the blood in malignant fevers to this tendency of the blood-veſſels to a paralytic ſtate. It begins in the veins in which muſcular action is more feeble than in the arteries. This has been proved by Dr. Mitchell in his account of the yellow fever in Virginia in the year 1741. He found the blood to be diſſolved when drawn from the veins, which when drawn from the arteries of the ſame perſons, exhibited no marks of diſſolution. This fact is of great importance in medicine, as I hope to ſhew when I come to treat of blood-letting.

From the facts and analogies which have been mentioned, I have been led to believe that irregular action or a convulſion in the blood-veſſels, is the proximate cauſe of fever.

There is a wonderful frugality in the operations of nature. Two inſtruments are never employed by her to accompliſh that which can be effected by one. As the prediſpoſing and remote cauſes of all general diſeaſes are ſimple, ſo is the proximate. My theory of fever then reſolves itſelf into a chain, conſiſting of four links. 1. Prediſpoſing debility, or weakened

weakened excitement of the blood-veſſels. 2. An increaſe of their excitability. 3. Stimulating powers applied to them. And, 4. Irregular action or convulſion.

I might digreſs here, and ſhew that all diſeaſes, whether they be ſeated in the arteries, muſcles, nerves, brain, or alimentary canal, are all preceded by debility; and that their eſſence conſiſts in irregular action, or in the abſence of the natural order of motion, produced or invited by prediſpoſing debility. Hence they have very properly been called DISORDERS. I might further ſhew, that all the moral as well as phyſical evil of the world conſiſts in prediſpoſing weakneſs, and in ſubſequent derangement of action or motion; but theſe collateral ſubjects are foreign to our preſent inquiry.

Let us now proceed to examine how far the theory, which has been delivered, accords with the phenomena of fever.

I ſhall divide theſe phenomena into two kinds.

I. Such as are tranſient, and more or leſs common to all fevers. Theſe I ſhall call *ſymptoms* of fever.

II. Such

II. Such as, being more permanent and fixed, have given riſe to certain ſpecific names. Theſe I ſhall call *ſtates* of fever.

I ſhall endeavour to explain and deſcribe each of them in the order in which they have been mentioned.

1. Laſſitude is the natural effect of the predisposing debility which precedes fever.

Coldneſs and chills are the effects of the abſtraction of excitement, or natural motion from the ſurface of the body. The abſence of chills indicates the ſenſibility of the external parts of the body to be ſuſpended or deſtroyed, as well as their irritability; hence where death occurs in the fit of an intermittent, there is no chill. A chilly fit, for the ſame reaſon, ſeldom occurs in the moſt malignant caſes of fever. It has been remarked, that the chilly fit, in common fevers, ſeldom appears in its full force until the patient approaches a fire, or lies down in a warm bed; for in theſe ſituations the ſenſibility of the ſyſtem is reſtored by the ſtimulus of the heat acting upon the extremities of the blood-veſſels. It is produced in a mechanical manner, and is by no means the effect of an effort of the healing powers of nature to ſave the ſyſtem from deſtruction.

Tremors

Tremors are the natural conſequence of the abſtraction of that ſupport which the muſcles receive from the fulneſs and tenſion of the blood-veſſels. It is from this retreat of the blood towards the viſcera, that the capillary arteries loſe their fulneſs and tenſion; hence they contract like other ſoft tubes that are emptied of their contents. This contraction has been called a ſpaſm, and has improperly been ſuppoſed to be the proximate cauſe of fever. From the explanation that has been given of its cauſe, it appears like the coldneſs and chills, to be nothing but an accidental concomitant or effect of a paroxyſm of fever.

The local pains in the head, breaſt, and bones in fever, appear to be the effects of the irregular determination of the blood to thoſe parts, and to morbid action being thereby induced in them.

The vomiting and diarrhœa are produced by morbid excitement in the veſſels of the ſtomach and bowels.

The want of appetite and coſtiveneſs are the conſequences of a defect of excitement or natural action in the ſame parts of the body.

The

The dry ſkin or partial ſweats appear to depend upon diminiſhed or partial action in the veſſels which terminate on the ſurface of the body.

The high coloured and pale urine, are occaſioned by an exceſs or a deficiency of excitement in the ſecretory veſſels of the kidneys.

The ſuppreſſion of the urine ſeems to ariſe from what Dr. Clark calls an engorgement, or choaking of the veſſels of the kidneys. It occurs moſt frequently in malignant fevers.

Thirſt is probably the effect of a preternatural excitement of the veſſels of the fauces. It is by no means an uniform ſymptom of fever. We ſometimes obſerve it in the higheſt degree, in the laſt ſtage of diſeaſes, induced by the retreat of the laſt remains of excitement from every part of the body, to the throat.

The white tongue is produced by a change in the ſecretion which takes place in that organ. Its yellow colour is the effect of bile; its dryneſs, is occaſioned by an obſtruction of ſecretion; and its dark and black colour, by a tendency to mortification.

It will be difficult to account for the variety in the degrees and locality of *heat* in the body in a fever, until we know more of the cauſe of animal heat. From whatever cauſe it be derived, its exceſs and deficiency, as well as all its intermediate degrees, are intimately connected with more or leſs excitement in the arterial ſyſtem. It is not neceſſary that this excitement ſhould exiſt only in the large blood-veſſels. It will be ſufficient for the purpoſe of creating great heat, if it occur only in the cutaneous veſſels; hence we find a hot ſkin in ſome caſes of malignant fever in which there is an abſence of pulſe. A defect of excitement produced by great exceſs of ſtimulus, as in the firſt ſtage of violent malignant fevers, is often accompanied by a deficiency of heat, and in ſome inſtances by a coldneſs on the ſurface of the body. In theſe caſes there is a defect of excitement in the veſſels of the ſkin as well as in the larger blood-veſſels. Local heat, whether in the head, breaſt, hands, or feet, I ſuppoſe to be the effect of local excitement.

Eruptions ſeem to depend upon effuſions of ſerum, lymph, or red blood upon the ſkin, with or without inflammation, in the cutaneous veſſels.

I decline taking notice in this place of the ſameneſs of the ſymptoms which are produced by in-

direct and direct debility in the ſyſtem. They appear not only in the temperature of the body, but in all the different ſymptoms of fever. It is of importance to know when they originate from the former, and when from the latter ſtates of debility, as they require very different and oppoſite remedies to remove them.

It remains only to explain the cauſe, why exceſs in the force or frequency of the action of the blood-veſſels ſhould ſucceed debility in a part, or in the whole of the body, and be connected for days and weeks with preternatural debility in the muſcles, nerves, brain, and alimentary canal. I ſhall attempt the explanation of this phenomenon by directing the attention of the reader to the operations of nature in other parts of her works.

1. A calm may be conſidered as a ſtate of debility in the atmoſphere. It prediſpoſes to a current of air. But is this current proportioned to the loſs of the equilibrium of the air? By no means: It is exceſſive in its force, and tends thereby to deſtroy the works both of nature and art.

2. The paſſions are given to man on purpoſe to aid the ſlow and uncertain operations of reaſon. But is their action always proportioned to the cauſes which excite them? An acute pneumony brought

on by the trifling injury done to the ſyſtem by the fatigue and heat of an evening ſpent in a dancing aſſembly, is but a faint repreſentation of the immenſe diſproportion between a trifling affront, and that exceſs of paſſion which ſeeks for gratification in poiſon, aſſaſſination, or a duel. The ſame diſproportion appears between cauſe and effect in public bodies. A haſty word of no miſchievous influence, has often produced convulſions, and even revolutions, in ſtates and empires.

If we return to the human body, we ſhall find in it many other inſtances of the diſproportion between ſtimulus and action, beſides that which takes place in the exciting and proximate cauſe of fever.

3. A ſingle caſtor oil nut, although rejected by the ſtomach upon its firſt effort in vomiting, has, in one inſtance that came within my knowledge, produced a vomiting that continued nearly twenty-four hours. Here the duration of action was far beyond all kind of proportion to the cauſe which excited it.

4. A grain of ſand, after being waſhed from the eye, is often followed by ſuch an inflammation, or exceſs in the action of the veſſels of the eye, as to require bleeding, purging, and bliſtering to remove it.

Could

Could we comprehend every part of the ſublime and ineffable ſyſtem of the natural, moral, and political government of the world, I am ſure we ſhould diſcover nothing in it, but what tended ultimately to order and happineſs. But there is evil in the world, and the operations of nature, which were originally the miniſters of goodneſs only to man, are in many inſtances the vehicles of this evil. In religion and morals, as well as in medicine, nature leads to error and deſtruction. When we worſhip the ſun, a cat, a crocodile, or the devil, we follow nature. When we lie, ſteal, and commit murder and adultery, we follow nature. In like manner, when we indulge every appetite and paſſion of our patients in ſickneſs, and create hæmorrhages, obſtructions, dropſies, palſies, apoplexies, and death, by neglecting bleeding and purging in fevers, we follow nature. But while I maintain this unuſual language in medicine, let it be remembered, that the operations of nature were not originally the means of ſeducing or injuring man; and Revelation aſſures us, that a time will come, when the dominion of order ſhall be reſtored over every action of his body and mind, and health and happineſs again be the reſult of every movement of nature.

From the view I have given of the ſtate of the blood-veſſels in fever, the reader will perceive the

difference between my opinions and Dr. Brown's upon this ſubject. The Doctor ſuppoſes a fever to conſiſt in debility. I do not admit debility to be a diſeaſe, but place it wholly in morbid excitement, invited and fixed by previous debility. He makes a fever to conſiſt in a change only of a natural action of the blood-veſſels. I maintain that it conſiſts in a preternatural and convulſive action of the blood-veſſels. Laſtly, Dr. Brown ſuppoſes excitement and excitability to be equal in fever. My theory ſuppoſes a fever to be the reverſe of this. It conſiſts in unequal or divided excitement and excitability. Health conſiſts in the equality and uniformity of them both; and the buſineſs of medicine, as I ſhall ſay hereafter, is to equalize them in the cure of fever; that is, to abſtract their exceſs from the blood-veſſels, and to reſtore them to the other parts of the body.

It belongs to this part of our view of fever to repeat from Dr. Boerhaave, that its termination is always in health, in another diſeaſe, or in death. A ſlight fever only can terminate in health. All fevers of violent action, when left to themſelves, or when partially cured, terminate in other diſeaſes, or in death. The laſt is the effect of the ſingle or combined operation of the following cauſes: 1. Effuſions in parts eſſential to life. 2. Such a change being

being induced in the excretions, by the violent action of the veſſels upon the blood, as to render them deſtructive to the organs of the body. 3. The inability of the ſyſtem, from univerſal direct debility, to receive impreſſions, or to ſupport the motions of life. Or laſtly, death from fever is the effect of the combined operation of all the three cauſes that have been mentioned. I cannot diſmiſs the blood-veſſels, as the ſeat of a general and frequent diſeaſe, without lamenting that their phyſiology and pathology have been ſo little ſtudied by phyſicians. They are the firſt born parts of the human body; they ſupport, in a great meaſure, the ſenſibility and irritability of the nervous ſyſtem; they are the centinels of the whole ſyſtem in ſleep; and, they are the laſt retreat of departing life.

II. I come now to apply the theory which I have delivered, to the explanation and deſcription of the different phenomena or ſtates of fever.

I have ſaid that there is but one fever. Of courſe I do not admit of its artificial diviſion into genera and ſpecies. A diſeaſe which ſo frequently changes its form and place, ſhould never have been deſignated, like plants and animals, by unchangeable characters. The oak tree and the lion poſſeſs exactly the ſame properties which they did near 6000 years ago.

But who can ſay the ſame thing of any one diſeaſe? The pulmonary conſumption is ſometimes transformed into head ach, rheumatiſm, diarrhœa, and mania, in the courſe of two or three months, or the ſame number of weeks. The bilious fever often appears in the ſame perſon in the form of colic, dyſentery, inflammation of the liver, lungs, and brain, in the courſe of five or ſix days. The hypochondriaſis and the hyſteria ſeldom fail to exchange their ſymptoms twice in the four-and-twenty hours. Again: The oak tree has not united with any of the trees of the foreſt, nor has the lion imparted his ſpecific qualities to any other animal. But who can apply ſimilar remarks to any one diſeaſe? Phrenitis, gaſtritis, enteritis, nephritis, and rheumatiſm, all appear at the ſame time in the gout and yellow fever. Many obſervations of the ſame kind might be made upon all other diſeaſes. To deſcribe them therefore by any fixed or ſpecific characters, is as impracticable as to meaſure the dimenſions of a cloud on a windy day, or to fix the component parts of water by weighing it in a hydroſtatic balance. Much miſchief has been done by noſological arrangements of diſeaſes.

They erect imaginary boundaries between things which are of a homogeneous nature. They degrade the human underſtanding, by ſubſtituting ſimple perceptions, to its more dignified operations of

of judgment and reaſoning. They gratify indolence in a phyſician, by fixing his attention upon the name of a diſeaſe, and thereby leading him to neglect the varying ſtate of the ſyſtem. They moreover lay a foundation for diſputes among phyſicians, by diverting their attention from the ſimple predisposing and proximate, to the numerous, remote, and exciting cauſes of diſeaſes, or to their more numerous and complicated effects. The whole materia medica is infected with the baneful conſequences of the nomenclature of diſeaſes; for every article in it is pointed only againſt their names, and hence the origin of the numerous contradictions among authors who deſcribe the virtues and doſes of the ſame medicines. By the rejection of the artificial arrangement of diſeaſes, a revolution muſt follow in medicine. Obſervation and judgment will take the place of reading and memory, and preſcriptions will be conformed to exiſting circumſtances. The road to knowledge in medicine by this means will likewiſe be ſhortened; ſo that a young man will be able to qualify himſelf to practice phyſic at as much leſs expenſe of time and labour than formerly, as a child would learn to read and write by the help of the Roman alphabet, inſtead of Chineſe characters.

In thus rejecting the noſologies of the ſchools, I do not wiſh to ſee them baniſhed from the libra-

ries of phyſicians. When conſulted as hiſtories of the effects of diſeaſes only, they may ſtill be uſeful. I uſe the term diſeaſes, in conformity to cuſtom, for properly ſpeaking, diſeaſe is as much a unit as fever. It conſiſts ſimply of morbid action or excitement in ſome part of the body. Its different ſeats and degrees, ſhould no more be multiplied into different diſeaſes, than the numerous and different effects of heat, and light upon our globe ſhould be multiplied into a plurality of ſuns.

The advocates for Dr. Cullen's ſyſtem of medicine, will not, I hope, be offended by theſe obſervations. His immenſe ſtock of reputation, will enable him to ſuſtain the loſs of his noſology, without being impoveriſhed by it. In my attempts to introduce a new arrangement of diſeaſes, I ſhall only give a new direction to his efforts to improve the healing art.

I have conſidered morbid action in the blood-veſſels, whether it conſiſt in preternatural force and frequency, or preternatural force without frequency, or frequency without force, to conſtitute the proximate cauſe of fever. Exceſs in the force and frequency of the blood-veſſels, has been conſidered as the characteriſtic mark of what is called inflammatory fever. But there are marks which indicate a much greater exceſs of ſtimulus upon the blood-

veſſels,

veſſels. Theſe are preternatural ſlowneſs, intermiſſions and depreſſion in the pulſe, ſuch as occur in certain malignant fevers. In applying my theory of fever to the explanation of all its different ſtates, I am led by this view of its inflammatory ſtate, to conſider them in the order of their inflammatory character, or according to the force of ſtimulus which acts upon the blood-veſſels. The following appears to be the uſual order of inflammatory diatheſis, preſented to us by nature, in the different fevers which are deſcribed by authors;

1. The plague.
2. The yellow fever.
3. The natural ſmall-pox.
4. The malignant ſore throat.
5. The fever from the alternate action of cold and heat on the body, appearing with the ſymptoms of pleuriſy, rhumatiſm, tonic gout, internal dropſy of the brain, and pulmonary conſumption.
6. The meaſles.
7. Catarrh from cold, and influenza from contagion.
8. The common remitting fever, appearing occaſionally with the ſymptoms of colic, dyſentery, inflammation of the liver, and internal dropſy of the brain.
9. The ſcarlatina, puerperile and hectic fevers.
10. The

10. The jail fever.
11. The common mild intermittent.

This ſcale of the degrees of morbid action in fevers is taken from their uſual ſymptoms. They vary with climate, ſeaſon, and habit. There are intermittents, jail, and puerperile fevers, ſo inflammatory as to require frequent bleedings to cure them; and there are caſes of plague, yellow fever, and pleuriſy, which yield to a ſingle doſe of purging phyſic. It is upon the account of this want of uniformity in the character of fevers, and the influence of climate, ſeaſon, and habit upon them, that I ſhall follow Dr. Clark, by ſubſtituting in the place of their uſual names, certain definite ſtates which may be applied, with varying circumſtances, to them all.

1. I ſhall divide them into ſuch as affect the whole arterial ſyſtem, with no, or but little local affection.

2. Into ſuch as affect the whole arterial ſyſtem, and are accompanied at the ſame time with evident local affections. And,

3. Into ſuch as appear to paſs by the arterial ſyſtem, and to fix themſelves upon other parts of the

the body. Theſe ſtates of fever I ſhall call *miſplaced.*

1. I ſhall begin under the firſt head, with the MALIGNANT ſtate of fever. It conſtitutes the higheſt grade of inflammatory diatheſis. It is known by attacking frequently without a chilly fit, by coma, a depreſſed, ſlow, or intermitting pulſe, and ſometimes by a natural temperature or coldneſs of the ſkin. It occurs in the plague, in the yellow fever, in the gout, and in the ſmall-pox. Dr. Quier has deſcribed a pleuriſy in Jamaica, in which ſome of thoſe malignant ſymptoms took place. They are the effect of ſuch a degree of ſtimulus as to proſtrate the arterial ſyſtem, and to produce a defect of action from an exceſs of force. Such is this exceſs of force in ſome inſtances in this ſtate of fever, that it induces general convulſions, tetanus, and palſy, and ſometimes extinguiſhes life in a few hours by means of apoplexy or ſyncope. The leſs violent degrees of ſtimulus in this ſtate of fever produce palſy in the blood-veſſels. It probably begins in the veins, and extends gradually to the arteries. It ſeems further to begin in the extremities of the arteries, and to extend by degrees to their origin in the heart. This is evident in the total abſence of pulſe which ſometimes takes place in malignant fevers four-and-twenty, and even eight and forty hours before death.

death. But there are cafes in which this palfy affects both the veins and arteries at the fame time. It is probably from this fimultaneous affection of the blood-veffels, that the arteries are found to be nearly full of blood after death from malignant fevers. The depreffed, and intermitting pulfe which occurs in the beginning of thefe fevers perhaps depends upon a tendency to palfy in the arteries independently of an affection of the heart or brain.

This *depreffed* ftate of fever more frequently when left to itfelf terminates in petechiæ, buboes, carbuncles, abfceffes and mortifications, according as ferum, lymph, or red blood is effufed in the vifcera or external parts of the body. Thefe morbid appearances have been afcribed to putrefaction, and the fever has received, from its fuppofed prefence, the name of putrid. The exiftence of putrefaction in the blood in a fever is rendered improbable,

1. By Dr. Seybert's experiments * which prove that it does not take place in the blood in a living ftate. It occurs in the excretions of bile, fæces, and urine, but in this cafe it does not act as a ferment, but a ftimulus only upon the living body.

* Inaugural differtation entitled, "An Attempt to difprove the putrefaction of the blood in living animals."

2. By

2. By ſimilar appearances, with thoſe which have been aſcribed to putrefaction, having been produced by lightning, by violent emotions of the mind, by extreme pain, and by every thing elſe which induces ſudden and univerſal diſorganiſation in the fluids and ſolids of the body. To the facts mentioned in a former work,* with a view of refuting the opinion of putrefaction taking place in the blood, I ſhall add ſome others, which clearly prove that the ſymptoms which have been ſuppoſed to deſignate a putrid fever, are wholly the effect of mechanical action in the blood-veſſels, and are unconnected with the introduction of a putrid ferment into the blood.

Hippocrates relates the caſe of a certain Antiphillus, in whom a putrid bilious fever (as he calls it) was brought on by the application of a cauſtic to a wound.†

An acute pain in the eye, Dr. Phyſick informed me, produced what are called the ſymptoms of a putrid fever, which terminated in death in five days, in St. George's hoſpital in the year 1789.

Dr. Deſportes takes notice that a fiſh which he calls a ſucker, affected the ſyſtem nearly in the ſame

* Account of the yellow fever, in 1793.

† Epidemics, book iv.

manner

manner as the contagion of the yellow fever. A diſtreſſing vomiting, a coldneſs of the extremities, and an abſence of pulſe, were ſome of the ſymptoms produced by it, and an inflammation and mortification of the ſtomach and bowels, were diſcovered after death to be the effects of its violent operation.

Even opium in large doſes, ſometimes produces by its powerful ſtimulus the ſame ſymptoms which are produced by the ſtimulus of what are called putrid contagions. Theſe ſymptoms are, a ſlow pulſe, coma, a vomiting, cold ſweats, a ſallow colour of the face, and a ſuppreſſion of the diſcharges by the urinary paſſages and bowels.

Error is often perpetuated by words. A belief in the putrefaction of the blood has done great miſchief in medicine. The evil is kept up, under the influence of new theories, by the epithet putrid, which is ſtill applied to fever in all our medical books. For which reaſon I ſhall reject it altogether hereafter, and ſubſtitute in its room

2. The GANGRENOUS ſtate of fever, for what appear to ſome phyſicians to be ſigns of putrefaction, are nothing but the iſſue of a violent inflammation left in the hands of nature, or accelerated by ſtimulating medicines. Thus the ſun, when viewed at mid-day

mid-day, appears to the naked eye, from the excefs of its ſplendor, to be a maſs of darkneſs, inſtead of an orb of light.

The ſame explanation of what are called putrid ſymptoms in fever, is very happily delivered by Mr. Hunter in the following words: "It is to be obſerved (ſays this acute phyſiologiſt) that when the attack upon theſe organs, which are principally connected with life, proves fatal, that the effects of the inflammation upon the conſtitution, run through all the ſtages with more rapidity than when it happens in other parts; ſo that at its very beginning, it has the ſame effect upon the conſtitution, which is only produced by the ſecond ſtage of inflammation in other parts." *

3. The SYNOCHA, or the common inflammatory ſtate of fever, attacks ſuddenly with chills, and is ſucceeded by a quick, frequent, and tenſe pulſe, great heat, thirſt, and pains in the bones, joints, breaſt, or ſides. Theſe ſymptoms ſometimes occur in the plague, the jail and yellow fever, and the ſmall-pox; but they are the more common characteriſtics of pleuriſy, gout, and rheumatiſm. They now and then occur in the influenza, the meaſles, and the puerperile fever.

* Treatiſe on Inflammation, chap. I. 8.

4. The

4. The BILIOUS ſtate of fever is produced by marſh miaſmata or contagion, acting ſpecifically upon the biliary ducts, or it may be induced by the uſual remote cauſes of the gout. It is known by a full, quick, and tenſe pulſe, or by a quick, full, and round pulſe, without tenſion, and by a diſcharge of green, dark coloured, or black bile from the ſtomach and bowels.

Beſides theſe occaſional forms of bilious fever, it ſometimes puts on the ſymptoms of a hectic. I have ſeen many inſtances of it in the autumn. The patient feels no pain in his head, has a tolerable appetite, and is able to ſit up, and even to do buſineſs. My late invaluable friend Dr. Clarkſon, died of this ſtate of bilious fever.

5. The TYPHUS ſtate of fever is generally preceded by all thoſe circumſtances which induce direct debility. It is known by a weak and frequent pulſe, a diſpoſition to ſleep, a torpor of the alimentary canal, tremors of the hands, a dry tongue, and, in ſome inſtances, by a diarrhœa. Theſe ſymptoms occur moſt frequently in the mild grades of the jail fever, and in the cloſe of all the inflammatory ſtates of fevers in which depleting remedies have not been uſed in their firſt ſtage. I heard of it in a few caſes in the yellow fever of 1793,

and all writers take notice of cases of the plague, which run on into a slow fever that continues 30 and 40 days. I have seen it succeed the common bilious fever, pleurisy, and influenza. It has been confounded with the malignant state of fever, under the name of typhus gravior; but it differs widely from it in being accompanied by a feeble excitement in the blood-vessels, from a feeble stimulus, and by the usual signs of direct debility in every other part of the body.

From the accession of new stimuli, or an increase in the force of former ones, this typhus state of fever sometimes assumes, on the 11th, 14th, and even 20th days, the symptoms of the synocha state of fever. It will be useful to remember this observation, not only because it establishes the unity of fever, but because it will justify the use of a remedy, seldom prescribed after the disease has acquired that name which associates it with stimulating medicines.

The common name of this state of fever is, the *nervous* fever. This name is improper; for it invades the nervous system by pain, delirium, and convulsions much less than several other states of fever. To prevent the absurd, and often fatal association of ideas upon the treatment of this state of

fever, I ſhall hereafter call it, from its duration, the *low chronic* ſtate of fever. I have adopted the term *low*, from Dr. Butter's account of the remitting fever of children, in order to diſtinguiſh it from ſtates of fever to be mentioned hereafter, in which the patient is not confined to his bed. This new name of the typhus or nervous fever, eſtabliſhes its analogy with ſeveral other diſeaſes. We have the acute and the chronic rheumatiſm; the acute ar chronic pneumony, commonly called the pleuriſ and pulmonary conſumption; the acute and chronic inflammation of the brain, known unfortunately by the unrelated names of phrenitis, madneſs, and internal dropſy of the brain. Why ſhould we heſitate, in like manner, in admitting acute and chronic fever in all thoſe caſes where no local inflammation attends.

6. The *typhoid* ſtate of fever is compoſed of the ſynocha and low chronic ſtates of fever. It is the *ſlow* nervous fever of Dr. Butter. The excitement of the blood-veſſels is ſomewhat greater than in the *low* chronic ſtate of fever. Perhaps the muſcular fibres of the blood-veſſels, in this ſtate of fever, are affected by different degrees of ſtimulus and excitement. Suppoſing a pulſe to conſiſt of eight cords, I think I have frequently felt more or leſs of them tenſe or relaxed, according as the fever partook more

more or leſs of the ſynocha, or low chronic ſtates of fever. This ſtate of fever occurs moſt frequently in what are called the hectic and puerperal fevers, and in the ſcarlatina.

Both the low chronic, and the typhoid ſtates of fever (the fever generated in jails, ſhips, and hoſpitals excepted) are moſt frequently artificial diſeaſes. They are created by the negligence of patients, in not ſending for early medical aid, or by the ignorance of phyſicians in not uſing ſufficient evacuations.

7. There is a ſtate of fever inclining more to the ſynocha than what is called the typhus, or low chronic ſtate of fever. I have called it the *ſynochoid* ſtate of fever.

8. There is a ſtate of fever in which the pulſe is ſmall, but tenſe and quick. The patient, in this ſtate of fever, is ſeldom confined to his bed. We obſerve it ſometimes in the chronic rheumatiſm, and in pulmonary conſumption. The inflammatory ſtate of this grade of fever is proved from the inefficacy of the volatile tincture of guaiacum and other ſtimulants to remove it, and from its yielding ſo ſuddenly to blood-letting. I have called it the *ſynochula* ſtate of fever.

9. The HECTIC ſtate of fever differs from all the other ſtates of fever, by the want of regularity in its paroxyſms, in which chills, fever, and ſweats are included; and by the brain, nerves, muſcles, and alimentary canal, being but little impaired in their functions by it. It appears to be an excluſive diſeaſe of the blood-veſſels. It occurs in the pulmonary conſumption, in ſome caſes of lues, of ſcrophula, and of the gout, and after moſt of the ſtates of fever which have been deſcribed. The force of the pulſe is various, being occaſionally ſynochoid, typhoid, and typhus.

10. There is a ſtate of fever in which the morbid action of the blood-veſſels is ſo feeble, as ſcarcely to be perceptible. Like the hectic ſtate of fever, it ſeldom affects the brain, nerves, muſcles, or alimentary canal. It is known in the ſouthern ſtates of America, by the name of INWARD fevers. The Engliſh phyſicians formerly deſcribed it by the name of febricula.

11. Intermiſſions, or the INTERMITTING and remitting ſtates of fever, are common to all the ſtates of fever which have been mentioned. But they occur moſt diſtinctly and univerſally in thoſe which partake of the bilious diatheſis. They have been aſcribed to the reproduction of the ſtimulus of bile,

to

to the recurrence of debility, and to the influence of the heavenly bodies upon the ſyſtem. None of theſe hypotheſes has explained the recurrence of fever, where the bile has not been in fault, where debility is uniform, and where the paroxyſms of fever do not accord with the revolutions of any part of the ſolar ſyſtem. I have endeavoured to account for the recurrence of the paroxyſm of fever, in common with all other periodical diſeaſes, by means of a natural or adventitious aſſociation of motions. Dr. Percival has glanced at this law of animal matter; and Dr. Darwin has explained by it, in the moſt ingenious manner, many natural and morbid actions in the human body.

12. The SWEATING ſtate of fever occurs in the plague, in the yellow fever, in the ſmall-pox, the pleuriſy, the rheumatiſm, and in the hectic and intermitting ſtates of fever. Profuſe ſweats appeared every other day in the autumnal fever of 1795 in Philadelphia, without any other ſymptom of an intermittent. The Engliſh ſweating ſickneſs was nothing but a ſymptom of the plague. The ſweats in all theſe caſes are the effects of morbid and exceſſive action, concentrated in the capillary veſſels.

13. The FAINTING ſtate of fever accompanies the plague, the yellow fever, the ſmall-pox, and

ſome ſtates of pleuriſy. It is the effect of great indirect debility; hence it occurs moſt frequently in the beginning of thoſe ſtates of fever.

14. The BURNING ſtate of fever has given riſe to what has been called a ſpecies of fever. It is the cauſus of authors. Dr. Moſely, who rejects the epithet of yellow, when applied to the bilious fever, becauſe it is only one of its accidental ſymptoms, very improperly diſtinguiſhes the ſame fever by another ſymptom, viz. the burning heat of the ſkin, and which is not more univerſal than the yellowneſs which attends it.

15. The COLD and CHILLY ſtate of fever differs from a common chilly fit, by continuing four or five days, and to ſuch a degree, that the patient frequently cannot bear his arms out of the bed. The coldneſs is moſt obſtinate in the hands and feet. A COOLNESS only of the ſkin attends in ſome caſes, which is frequently miſtaken for an abſence of fever.

Having mentioned thoſe ſtates of fever which affect the arterial ſyſtem, without any, or with but little topical affection, I proceed next to enumerate thoſe ſtates of fever in which there are local affections combined more or leſs with general fever.

fever. They depend, 1. Upon local debility in the part affected. 2. Upon increaſed excitability in the part, in conſequence of this debility. And, 3. Upon the morbid excitement induced in the part, by the ſtimulus of diſtention from the blood, and by the effuſion of ſerum, lymph, or red globules in the weakened, and afterwards inflamed part. The reader will perceive here that I adopt the error loci of Dr. Boerhaave, as a link in the chain of cauſes which produce local inflammation. The ſtates of fever which belong to this ſecond head are as follow.

16. The INTESTINAL ſtate of fever. I have been anticipated in giving this epithet to fever, by Dr. Balfour. * It includes the colera morbus, diarrhœa, dyſentery, and colic. The remitting bilious fever appears, in all the above forms, in the ſummer months. They all belong to the febris introverſa of Dr. Sydenham. The jail fever appears likewiſe frequently in the form of diarrhœa and dyſentery. The dyſentery is the offspring of miaſmata and contagion, but it is often induced in a weak ſtate of the bowels, by other exciting cauſes. The colic occaſionally occurs with ſtates of fever to be mentioned hereafter.

* Account of the Inteſtinal Remitting Fever of Bengal.

17. The PULMONARY ſtate of fever includes the true and baſtard pneumony in their acute forms; alſo catarrh from cold and contagion, and the chronic form of pneumony in what is called pulmonary conſumption.

18. The ANGINOSE ſtate of fever includes all thoſe affections of the throat which are known by the names of cynanche, inflammatoria, tonſillaris, parotidea, maligna, ſcarlatina, and trachealis. The cynanche trachealis is a febrile diſeaſe. The membrane which produces ſuffocation and death in the wind-pipe, is the effect of inflammation. It is probably formed, like other membranes which ſucceed inflammation, from the coagulable lymph of the blood.

19. The RHEUMATIC ſtate of fever is confined chiefly to the labouring part of mankind. The topical affection is ſeated moſt commonly in the joints and muſcles, which from being exerciſed more than other parts of the body, become more debilitated, and are, in conſequence thereof, excited into morbid or inflammatory action.

20. The ARTHRITIC or GOUTY ſtate of fever, differs from the rheumatic, in affecting, with the joints and muſcles, all the nervous and lymphatic ſyſtems,

ſyſtems, the viſcera, and the ſkin; alſo in having a ſpecific remote cauſe, viz. intemperance. Its prediſpoſing, exciting, and proximate cauſes are the ſame as the rheumatic and other ſtates of fever. It bears the ſame ratio to rheumatiſm, which the yellow fever bears to the common bilious fever. It is a fever of more force than rheumatiſm.

21. The MANIACAL ſtate of fever. I prove mania to be a fever, 1. From its cauſes, which are the ſame as thoſe which induce all the other ſtates of fever. 2. From its ſymptoms, particularly a full, tenſe, quick, and ſometimes a ſlow pulſe. 3. From the inflammatory appearances of the blood which has been drawn to relieve it. And, 4. From the phenomena exhibited by diſſection in the brains of maniacs, being the ſame as are exhibited by other inflamed viſcera after death. Theſe are, effuſions of water or blood, abſceſſes, and ſchirrus. The hardneſs in the brains of maniacs, taken notice of by ſeveral authors, is nothing but a ſchirrus (ſui generis) induced by the neglect of ſufficient evacuations in this ſtate of fever. The reader will perceive by theſe obſervations, that I reject madneſs from its ſuppoſed primary ſeat in the mind or nerves. It is as much an original diſeaſe of the blood-veſſels, as any other ſtate of fever. It is to phrenitis, what pulmonary conſumption

ſumption is to pneumony. The derangement in the operations of the mind is the effect only of a chronic inflammation of the brain, exiſting without an abſtraction of muſcular excitement.

22. The APOPLECTIC, 23. the PHRENITIC, 24. the PARALYTIC, 25. the LETHARGIC, and 26. the VERTIGINOUS ſtates of fever, often accompany the malignant ſtate of fever. They are commonly the effects of ſtrong ſtimuli acting ſuddenly upon the brain in the beginning of fever; but they ſometimes occur in the cloſe of the common ſtates of fever, more eſpecially where blood-letting has not been uſed in a ſufficient quantity.

27. The HYDROCEPHALIC ſtate of fever occurs chiefly in children. The water which is found in the brain, is the effect of inflammation. To the proofs from diſſections which I publiſhed formerly,* of the inflammatory nature of this ſtate of fever, I ſhall add one more, communicated to me by my former pupil Dr. Coxe, in a letter from London, dated July 17th, 1795. "It ſo happened (ſays my ingenious correſpondent) that at the time of my receiving your letter, Dr. Clark was at the hoſpital. I read to him that part of it which relates to your ſucceſs in the treatment of hydrocephalus internus.

* Medical Inquiries and Obſervations, Vol. II.

He

He was much pleaſed with it, and mentioned to me a fact, which ſtrongly corroborates your idea of its being a primary inflammation of the brain. This fact was, that upon opening, not long ſince, the head of a child who had died of this diſeaſe, he found between three and four ounces of water in the ventricles of the brain; alſo an inflammatory cruſt on the optic nerves, as thick as he had ever obſerved it on the inteſtines in a ſtate of inflammation. The child loſt its ſight before it died. The cruſt accounted, in a ſatisfactory manner, for its blindneſs. Perhaps ſomething ſimilar may be always noticed in the diſſections of ſuch as die of this diſeaſe, in whom the eyes are much affected."

30. The NEPHRITIC ſtate of fever is often induced by calculi, but it frequently occurs in the gout, ſmall-pox, and malignant ſtates of fever. There is ſuch an engorgement, or choaking of the veſſels of the kidneys, that the ſecretion of the urine is ſometimes totally obſtructed, ſo that the bladder yields no water to the catheter. It is generally accompanied with a full or tenſe pulſe, great pain, ſickneſs, or vomiting, high coloured urine, and a pain along the thigh and leg, with occaſionally a retraction of one of the teſticles. It exiſts ſometimes without any pain. Of this I met with ſeveral inſtances in the yellow fever of 1793.

31. The

31. The DROPSY, whether local or general is a *ſtate* of fever. There are ſeveral ſtates of fever which are more frequently accompanied by ſerous effuſions than others. Theſe are the ſcarlet, the puerperal, and the rheumatic ſtates of fever. They all diſpoſe to effuſions in the *limbs*. Intermittents tend to produce thoſe conjeſtions in the abdominal viſcera which terminate in effuſions in the *belly*. A neglected catarrh, and a half cured pneumony, tend to produce effuſions in the *thorax*, while a chronic phrenitis relieves itſelf by an effuſion of water in the *brain*. Nineteen dropſies, out of twenty appear to be original arterial diſeaſes; and the water, which has been ſuppoſed to be the cauſe of the dropſy, is as much the effect of preternatural and morbid action in the blood-veſſels, as pus, gangrene, and ſchirrus are of previous inflammation. The common febrile ſymptoms which accompany dropſy, render this highly probable; but it has lately been demonſtrated by diſſection, by Mr. Samuel Cooper, the apothecary of the Pennſylvania hoſpital, in a man who died of an aſcites. Pus and blood, as well as water, were found in the cavity of the abdomen.*

* The origin of dropſy, in the neglect of blood-letting in fevers, has been aſcertained by many obſervations; hence that diſeaſe occurs moſt frequently where bleeding is ſeldom uſed. Dr. Wilkes mentions a fact which is directly to our purpoſe. "After the laſt epidemical fever (ſays the Doctor),

It

It is no objection to this theory of dropsy, that we sometimes find water in the cavities of the body after death, without any marks of inflammation on the contiguous blood-vessels. We often find pus both in the living and dead body under the same circumstances, where we are sure it was preceded by inflammation.

33. The ERUPTIVE state of fever includes the small-pox, measles, and all the other exanthemata of Dr. Cullen.

33. The HÆMORRHAGIC state of fever is always the effect of preternatural excitement in the blood-vessels. Hæmorrhages have been divided into active and passive. It would be more proper to divide them, like other states of general fever, into hæmorrhages of strong and feeble morbid action. There is seldom an issue of blood from a vessel in which there does not exist preternatural or accumulated excitement. We observe this hæmorrhagic state of fever most frequently in malignant fevers, in pulmonary consumption, in pregnancy, and in that period of life in which the menses cease to be regular.

which began at Kidderminster in 1728, and soon after spread, not only over Great Britain, but all Europe, more people died dropsical in three years, than did perhaps in 20, or 30 years before."

Historical Essay on the dropsy, p. 326.

33. The

34. The AMENORRHAGIC ſtate of fever occurs more frequently than is ſuſpected by phyſicians. A full and quick pulſe, thirſt, and preternatural heat, often accompany a chronic obſtruction of the menſes. The inefficacy and even hurtful effects, of what are called emenagogue medicines, in this ſtate of the ſyſtem, without previous depletion, ſhew the propriety of introducing it among the different ſtates of fever.

35. The hæmorrhoids are frequently a local diſeaſe, but they are ſometimes accompanied with pain, giddineſs, chills and an active pulſe. When this is the caſe, I have given them the name of the HÆMORRHOIDAL ſtate of fever.

36. The opthalmia when it occurs with the ſymptoms of general fever, may properly be conſidered as an OPTHALMIC ſtate of fever.

We come now in the third and laſt place to mention the *miſplaced* ſtates of fever. The term is not a new one in medicine. We read of miſplaced gout. Morbid excitement, in ſeveral other ſtates of fever, is equally liable to be tranſlated from the blood-veſſels to other parts of the ſyſtem. The periodical pains in the head, eyes, ears, jaws, hips and back, which occur in the ſickly autumnal months,

months, and which impart no fulneſs, force, or frequency to the pulſe, are all miſplaced fevers. But there are other morbid affections which are leſs ſuſpected of belonging to febrile diſorders. Theſe are,

37. The HEPATIC ſtate of fever. The cauſes, ſymptoms, and remedies of the liver diſorder of the Eaſt Indies, as mentioned by Dr. Gravenſtine, all prove that it is nothing but a bilious fever tranſlated from the blood-veſſels, and abſorbed, or ſuffocated as it were in the liver. This view of the chronic hepatitis is important, inaſmuch as it leads to the liberal uſe of all the remedies which cure bilious fever. Gall ſtones and contuſions, now and then produce a hepatitis, but under no other circumſtances do I believe it ever exiſts, but as a ſymptom of general, or latent fever.

38. The CONVULSIVE or *ſpaſmodic* ſtate of fever. Convulſions it is well known often uſher in fevers, more eſpecially in children. But the connection between ſpaſmodic affections, and fever in adults has been leſs attended to by phyſicians. The ſame cauſes which produced general fever and hepatitis in the Eaſt Indies, in ſome ſoldiers, produced locked jaw in others. Several of the ſymptoms of this diſorder as deſcribed by Dr. Girdleſtone, ſuch as coldneſs

on

on the ſurface of the body, cold ſweats on the hands and feet, intenſe thirſt, a white tongue, inceſſant vomitings, and carbuncles, all belong to the malignant ſtate of fever.* By means of blood-letting, and the other remedies for the violent ſtate of bilious fever, I have ſeen the convulſions in this diſorder, tranſlated from the muſcles to the blood-veſſels, where they immediately produced *all* the common ſymptoms of fever.

39. The HYSTERICAL and HYPOCHONDRIACAL ſtates of fever. The former is known by a riſing in the throat, which is for the moſt part erroneouſly aſcribed to worms, by pale urine, and by a diſpoſition to ſhed tears, or to laugh upon trifling occaſions. The latter diſcovers itſelf by falſe opinions of the nature and danger of the diſeaſe under which the patient labours. Both theſe ſtates of the nervous ſyſtem occur frequently in the gout and in the malignant ſtate of fever. It is common to ſay, in ſuch caſes, that patients have a complication of diſeaſes; but this is not true, for the hyſterical and hypochondrical ſymptoms are nothing but the effects of one remote cauſe, concentrating its force chiefly upon the nerves, and muſcles. It was in this ſtate of fever that patients ſat up, walked about their

* Eſſay on the Spaſmodic Affections in India, p. 53. 54. 55.

rooms, and even went out into the ſtreets a few hours before they died, in the epidemic of 1793 in Philadelphia.

40. The CUTANEOUS ſtate of fever. Dr. Sydenham calls a dyſentery a "febris introverſa." Eruptions of the ſkin are often nothing but the reverſe of this introverted fever. They are a fever tranſlated to the ſkin; hence we find them moſt common in thoſe countries and ſeaſons in which fevers are epidemic. The prickly heat, the raſh, and the eſſere of authors, are all ſtates of miſplaced fever. "Agues, fevers, and even *pleuriſies* (ſays Mr. Townſend in his journey through Spain *) are ſaid often to terminate in ſcabies, and this frequently gives place to them, returning however when the fever ceaſes. In adults it takes poſſeſſion of the hands and arms, with the legs and thighs, covering them with a filthy cruſt." Small boils are common among the children in Philadelphia, at the time the colera infantum makes its appearance. Theſe children always eſcape the ſummer epidemic. The elephantiaſis deſcribed by Dr. Hillary in his account of the diſeaſes of Barbadoes, is evidently a tranſlation of an intermittent to one of the limbs. It is remarkable that the leproſy and malignant fevers of

* Vol. II. Dublin edition, p. 262.

all kinds have appeared and declined together in the ſame ages and countries. But further, petechiæ ſometimes appear on the ſkin without fever. Caſes of this kind with, and without hæmorrhages, are taken notice of by Riverius,* Dr. Duncan, and many other practical writers. They are cotemporary, or ſubſequent to fevers of a malignant complexion. They occur likewiſe in the ſcurvy. From ſome of the prediſpoſing, remote and exciting cauſes of this diſeaſe, and from its ſymptoms and remedies, I have ſuſpected it, like the petechiæ mentioned by Riverius, to be originally a fever generated by human miaſmata, in a miſplaced ſtate. The hæmorrhages which ſometimes accompany the ſcurvy, certainly ariſe from a morbid ſtate of the blood-veſſels. The heat, and quick pulſe of fever, are probably abſent, only becauſe the preternatural excitement of the whole ſanguiferous ſyſtem is confined to thoſe extreme or cutaneous veſſels which pour forth blood. In like manner the fever of the ſmall-pox deſerts the blood-veſſels, as ſoon as a new action begins on the ſkin. Or perhaps the excitability of the larger blood-veſſels may be ſo far exhauſted by the long, or forcible impreſſion of the remote and prediſpoſing cauſes of the ſcurvy, as to be incapable of undergoing the convulſive action of general fever.

* Praxis Medica, lib. xviii. cap. i.

With

With this, I close my inquiry into the proximate cause of fever. It is imperfect from its brevity, as well as from other causes. I commit it to my pupils to be corrected and improved.

" We think our fathers fools, so wise we grow.
" Our wiser sons *I hope* will think us so."

A

DEFENCE

OF

BLOOD-LETTING

AS A

REMEDY

FOR

CERTAIN DISEASES.

A

DEFENCE, &c.

BEFORE I proceed to the Defence of Blood-letting as a remedy for certain diſeaſes, particularly for fevers, it will be neceſſary to introduce a ſyllabus of all the uſual remedies for fever, in its ordinary ſtate. They conſiſt,

I. Of ſuch things as leſſen, by the abſtraction of ſtimulus, the morbid and exceſſive action of the blood-veſſels.

II. Of ſuch, as by exciting action in the ſtomach, bowels, brain, nerves, muſcles, and ſkin, equalize the excitement of the whole ſyſtem, and thereby indirectly deſtroy a weak but morbid action in the blood-veſſels, by imparting to them a more vigorous and healthy action.

I. The remedies which belong to the FIRST general head are,

I. Evacuants. Theſe are,

1. Blood-letting.
2. Vomits.
3. Purges.
4. Sweating medicines.
5. A ſalivation.
6. Bliſters.

II. Remedies which abſtract the ſtimulus

— of heat by 1. cold air,
2. cold water, and,
3. ice.
— of food by 4. abſtinence.
— of ſound and light by 5. ſilence and darkneſs.
— of invigorating paſſions by 6. moderate fear.
— of motion by 7. reſt.
— of acrimony by 8. diluting drinks, and,
9. cleanlineſs.

III. Remedies which divert local congeſtion, inflammation, and ſerous effuſion from vital parts, to ſuch as are leſs eſſential to life. Theſe are all ſuch as are mentioned under the head of evacuants, particularly a ſalivation and bliſters.

IV. Medicines ſaid to poſſeſs ſedative powers, ſuch as

1. Nitre, and other neutral ſalts.
2. Certain

2. Certain preparations of antimony.
3. Sugar of lead.
4. Fox-glove.
5. Applications of ſweet oil to the external ſurface of the body.

II. The remedies which belong to the SECOND general head, are ſtimulants. Theſe divide themſelves naturally into ſuch as are internal, and ſuch as are external.

I. The internal ſtimulants may further be divided into medicines and aliments. The medicines are

1. All fermented and diſtilled liquors.
2. Volatile alkali.
3. Empyreumatic and aromatic oils.
4. Opium.
5. Æther.
6. Bark, and bitters of all kinds.
7. Mercury.
8. Pure air.
9. The invigoration of the paſſions and underſtanding.

The aliments include ſuch vegetable and animal matters, as are commonly uſed in diet, together with ſago, ſaloop, tapioca, and the like.

II. The

II. The external ſtimulants are

1. Several of the internal ſtimulants ſo prepared, as to be applied to different parts of the body, as the noſe, the temples, the external regions of the ſtomach and bowels, the limbs, and the lower inteſtines, by way of glyſter.

2. The cold and warm baths.

3. Bliſters.

4. Cataplaſms of onions, garlic, and muſtard, to the feet.

5. Cauſtics.

6. Boiling water.

I return now, agreeably to the title of this eſſay, to conſider BLOOD-LETTING as a remedy for fevers, and certain other diſeaſes. In treating of the comparative advantages of blood-letting, I ſhall be under the neceſſity of making a few remarks upon each of the remedies ſet down in the ſyllabus, under the head of evacuants.

I ſhall begin this ſubject by remarking, that blood-letting is indicated in the inflammatory ſtate of fever,

1. By the ſudden ſuppreſſion or diminution of the natural diſcharges by the pores, bowels, and kidneys, whereby a plethora is induced in the ſyſtem.

2. By

2. By the robuſt habits of the perſons who are moſt ſubject to the inflammatory ſtate of fever.

3. By the proximate cauſe of fever. I have attempted to prove that the inflammatory ſtate of fever depends upon morbid and exceſſive action in the blood-veſſels. It is connected, of courſe, with preternatural ſenſibility in their muſcular fibres. The blood is one of the moſt powerful ſtimuli which act upon them. By abſtracting a part of it, we leſſen the principal cauſe of the fever. The effect of blood-letting is as immediate and natural in removing fever, as the abſtraction of a particle of ſand is to cure an inflammation of the eye, when it ariſes from that cauſe.

4. By the ſymptoms of the firſt ſtage of this ſtate of fever, ſuch as a ſleepineſs and an oppreſſed pulſe, or by delirium, with a throbbing pulſe and great pains, in every part of the body.

5. By the rupture of the blood-veſſels, which takes place from the quantity or impetus of the blood in inflammatory fever. Let no one call bleeding a cruel or unnatural remedy. It is one of the ſpecifics of nature; but in the uſe of it ſhe ſeldom affords much relief. She frequently pours the ſtimulating and oppreſſing maſs of blood into the lungs and

and brain; and when ſhe finds an outlet for it through the noſe, it is diſcharged either in ſuch a deficient or exceſſive quantity, as to be uſeleſs or hurtful. By artificial blood-letting, we can chooſe the *time* and *place* of drawing blood, and we may regulate its quantity by the degrees of action in the blood-veſſels. The diſpoſition of nature to cure the inflammatory ſtate of fever by depletion, is further manifeſted by her ſubſtituting, in the room of blood-letting, large, but leſs ſafe and leſs beneficial, evacuations from the ſtomach and bowels.

6. By the relief which is obtained in fevers of violent action by remedies of leſs efficacy (to be mentioned hereafter) which act indirectly in reducing the force of the ſanguiferous ſyſtem.

7. By the immenſe advantages which have attended the uſe of blood-letting in the inflammatory ſtate of fever, when uſed at a proper time, and in a quantity ſuited to the force of the diſeaſe. I ſhall briefly enumerate theſe advantages.

1. It frequently ſtrangles a fever when uſed in its forming ſtate, and thereby ſaves much pain, time, and expenſe to a patient.

2. It imparts ſtrength to the body, by removing the preſſure of indirect debility. It moreover obviates

viates a diſpoſition to faint, which ariſes from this ſtate of the ſyſtem.

3. It reduces the uncommon frequency of the pulſe. The loſs of ten ounces of blood reduced Miſs Sally Eyre's pulſe from 176 ſtrokes to 140 in a few minutes, in the fever of the year 1794.

4. It renders the pulſe more frequent when it is preternaturally ſlow.

5. It checks the nauſea and vomiting which attend the malignant ſtate of fever. Of this I ſaw many inſtances in the year 1794. Dr. Poiſſonnier Deſperrieres confirms this remark in his Account of the Fevers of St. Domingo; and adds further, that it prevents, when ſufficiently copious, the troubleſome vomiting which often occurs on the fifth day of the yellow fever. *

6. It renders the bowels, when coſtive, more eaſily moved by purging phyſic.

7. It renders the action of mercury more ſpeedy and more certain in exciting a ſalivation.

* Traitè des fievres de L'iſle de St. Domingue. Vol. II. p. 76.

8. It

8. It diſpoſes the body to ſweat ſpontaneouſly, or renders diluting and diaphoretic medicines more effectual for that purpoſe.

9. It *ſuddenly* removes a dryneſs, and *gradually* a blackneſs, from the tongue. Of the former effect of bleeding, I ſaw two inſtances, and of the latter, one, during the autumn of 1794.

10. It removes or leſſens pain in every part of the body, and more eſpecially in the head.

11. It removes or leſſens the burning heat of the ſkin, and the burning heat in the ſtomach, ſo common and ſo diſtreſſing in the yellow fever.

12. It removes a conſtant chilline ſs which ſometimes continues for ſeveral days, and which will neither yield to cordial drinks, nor warm bed-cloaths.

13. It checks ſuch ſweats as are profuſe without affording relief, and renders ſuch as are partial and moderate, univerſal and ſalutary.

14. It ſometimes checks a diarrhœa and teneſmus, after aſtringent medicines have been given to no purpoſe. This has often been obſerved in the meaſles.

15. It

15. It ſuddenly cures the intolerance of light which accompanies many of the inflammatory ſtates of fever.

16. It removes coma. Mr. Henry Clymer was ſuddenly relieved of this alarming ſymptom in the fever of 1794, by the loſs of twelve ounces of blood.

17. It induces ſleep. This effect of bleeding is ſo uniform, that it obtained, in the year 1794, the name of an anodyne in ſeveral families. Sleep ſometimes ſtole upon the patient while the blood was flowing.

18. It prevents effuſions of ſerum and blood. Hæmorrhages ſeldom occur where bleeding has been ſufficiently copious.

19. It belongs to this remedy to prevent the chronic diſeaſes of cough, conſumption, jaundice, abſceſs in the liver, and all the different ſtates of dropſy which ſo often follow autumnal fevers.

My amiable friend Mrs Lenox, furniſhed an exception to this remark in the year 1794. After having been cured of the yellow fever by ſeven bleedings, ſhe was affected, in conſequence of taking a ride,

a ride, with a ſlight return of fever, accompanied by an acute pain in the head, which I was afraid would end in a dropſy of the brain. As her pulſe was tenſe and quick, I adviſed repeated bleedings to remove it. This preſcription, for reaſons which it is unneceſſary to relate, was not followed at the time, or in the manner, in which it was recommended. The pain, in the mean time, became more alarming. In this ſituation, two phyſicians were propoſed by her friends to conſult with me. I objected to them both, becauſe I knew their principles and modes of practice to be contrary to mine, and that they were propoſed only with a view of wreſting the lancet from my hand. From this deſire of avoiding a controverſy with my brethren, where conviction was impoſſible on either ſide, as well as to obviate all cauſe of complaint by my patient's friends, I offered to take my leave of her, and to reſign her wholly to the care of the two gentlemen who were propoſed to attend her with me. To this ſhe objected in a decided manner. But that I might not be ſuſpected of an undue reliance upon my own judgment, I propoſed to call upon Dr. Griffitts or Dr. Phyſick to aſſiſt me in my attendance upon her. Both theſe phyſicians had renounced the prejudices of the ſchools in which they had been educated, and had conformed their principles and practice to the preſent improving ſtate of medical ſcience. My

patient preferred Dr. Griffitts, who in his firſt viſit to her, as ſoon as he felt her pulſe, propoſed more bleeding. The operation was performed by the Doctor himſelf, and repeated daily for five days afterwards. From an apprehenſion that the diſorder was ſo fixed as to require ſome aid to blood-letting, we gave her calomel in ſuch large doſes as to excite a ſalivation. By the uſe of theſe remedies ſhe recovered ſlowly, but ſo perfectly as to enjoy her uſual health.

20. Bleeding prevents the termination of the inflammatory, in the gangrenous and chronic ſtates of fever. This effect of blood-letting will enable us to underſtand ſome things in the writings of Dr. Morton, and Dr. Sydenham which at firſt ſight appear to be unintelligible. Dr. Morton deſcribes what he calls a putrid fever, which was epidemic, and fatal in the year 1678. Dr. Sydenham, who practiſed in London at the ſame time, takes no notice of this fever. The reaſon of his ſilence is obvious. By copious bleeding he prevented the fever of that year from running on to the gangrenous ſtate, while Dr. Morton by neglecting to bleed, created the ſuppoſed putrid fevers which he has deſcribed.

It has been common to charge the friends of blood-letting with *temerity* in their practice. From this view which has been given of it, it appears that

it would be more proper to aſcribe *timidity* to them, for they bleed to prevent the offenſive and diſtreſſing conſequences of neglecting it, which have been mentioned.

21. It cures without permitting a fever to put on thoſe alarming ſymptoms, which excite conſtant apprehenſions of danger and death in the minds of patients and their friends. It is becauſe theſe alarming ſymptoms are prevented, by bleeding, that patients are ſometimes unwilling to believe they have been cured by it, of a malignant fever. Thus the Syrian Leper of old, viewed the water of Jordan as too ſimple, and too common to cure a formidable diſeaſe, without recollecting that the remedies for the greateſt evils of life are all ſimple, and within the power of the greateſt part of mankind.

22. It prepares the way for the ſucceſsful uſe of the bark and other tonic remedies, by deſtroying, or ſo far weakning, a morbid action in the blood-veſſels, that a medicine of a moderate ſtimulus afterwards exceeds it in force, and thereby reſtores equable and healthy action to the ſyſtem.

23. Bleeding prevents relapſes. It moreover prevents that prediſpoſition to the intermitting, and pleuritic ſtates of fever which ſo frequently attack perſons

perſons in the ſpring, who have had the bilious remitting fever in the preceding autumn.

But great and numerous as the advantages of blood-letting are in fevers, there have been many objections to it. I ſhall briefly enumerate, and endeavour to refute the errors upon this ſubject.

Blood-letting has been forbidden by phyſicians, by the following circumſtances, and ſtates of the ſyſtem.

1. By warm weather. Galen bled in a plague, and Aræteus in a bilious fever, in a warm climate. Dr. Sydenham and Dr. Hillary, inform us that the moſt inflammatory fevers occur in, and ſucceed hot weather. Dr. Cleghorn preſcribed it copiouſly in the warm months, in Minorca. Dr. Moſely cured the yellow fever by this remedy in Jamaica. Dr. Broadbelt and Dr. Weſton in the ſame Iſland have lately adopted his ſucceſsful practice. Dr. Deſportes ſpeaks in the higheſt terms of it in all the inflammatory diſeaſes of St. Domingo. He complains of the neglect of it in the rheumatiſm, in conſequence of which he ſays, the diſeaſe produces abſceſſes in the lungs.* I have never in any

* P. 35.

year of my practice, been restrained by the heat of summer in the use of the lancet, where the pulse has indicated it to be necessary, and have always found the same advantages from it, as when I have prescribed it in the winter or spring months.

The relaxation and debility of the body in warm weather, and in hot climates, has not been understood until lately, to be of the indirect kind. Of course, instead of forbidding, it requires depletion to remove it. It is lessened at all times by abstemious living, and by gentle doses of physic, but when the stimulus of a fever is added to that of the heat of the sun, blood-letting is often more necessary to remove it, than it is in cool weather, or in temperate climates.

2. Being born, and having lived in a warm climate. This is so far from being an objection to blood-letting in an inflammatory disease, that it renders it more necessary. I think I have lost several West India patients from the influence of this error.

3. Great apparent weakness. This, in acute and violent fevers is always of the indirect kind. It is induced by pressure upon the sources of strength in the muscles. It resembles in so many particulars that weakness, which is the effect of the abstraction

of

of ſtimulus, that it is no wonder they have been confounded by phyſicians. This ſameneſs of ſymptoms from oppoſite ſtates of the ſyſtem is taken notice of by Hippocrates. He deſcribes convulſions, and particularly a hiccup as occurring equally from repletion and inanition which anſwer to the modern terms of indirect, and direct debility. The natural remedy for the former is depletion, and no mode of depleting is ſo effectual or ſafe as blood-letting. But, the great objection to this remedy is when the inflammatory ſtate of fever, affects perſons of delicate conſtitutions, and ſuch as have long been ſubject to direct debility of the chronic kind. In this ſtate of the ſyſtem, there is the ſame morbid and preternatural action in the blood-veſſels, that there is in perſons of robuſt habits, and the ſame remedy is neceſſary to ſubdue it in both caſes. It is ſometimes indicated in a larger quantity in weakly, than in robuſt people, by the plethora which is more eaſily induced in their relaxed, and yielding blood-veſſels, and by the greater facility with which ruptures and effuſions take place in their viſcera. Thus it is more neceſſary to throw overboard, a large part of the cargo of an old and leaky veſſel in a ſtorm, than of a new and ſtrong one. I know that vomits, purges, ſweats, and other evacuating remedies, are preferred to bleeding in weakly conſtitutions, but I hope to ſhew hereafter, that bleeding is not only more effectual,

fectual, but more ſafe in ſuch habits, than any other depleting remedy.

4. Infancy and childhood. This is ſo far from being an objection to bleeding, that the excitable ſtate of the blood-veſſels in thoſe periods of life, renders it peculiarly neceſſary in their inflammatory diſeaſes. Dr. Sydenham bled children in the hooping cough, and in dentition. I have followed his practice, and bled as freely in the inflammatory ſtate of fever in infancy as in middle life. I bled my eldeſt daughter when ſhe was but ſix weeks old, for convulſions brought on by an exceſſive doſe of laudanum given to her by her nurſe; and I bled my youngeſt ſon twice before he was two months old, for an inflammatory fever which fell upon his lungs and bowels. In both caſes, life appeared to be ſaved by this remedy.

5. Old age. The increaſe of appetite in old people, their inability to uſe ſufficient exerciſe, whereby their blood-veſſels become relaxed, plethoric and excitable, and above all, the tranſlation of the ſtrength of the muſcles to the arteries, and of plethora to the veins, all indicate bleeding to be more neceſſary (in equal circumſtances) in old than in middle aged people. I am not the author of this opinion. Botallus left a teſtimony in favor of it nearly

nearly 200 years ago,* and it has ſince been confirmed by the experience of Hoffman, and many other phyſicians. An ignorance of, or inattention to this change in the ſtate of the blood-veſſels, in perſons in the decline of life, and the neglect of the only remedy indicated by it, is probably the reaſon why diſeaſes often prove fatal to them, which in early, or middle life cured themſelves, or yielded to a ſingle doſe of phyſic, or a few ounces of bark.

6. The time of menſtruation. The ſyſtem during this period is plethoric and excitable, and of courſe diſpoſed to a violent degree of inflammatory fever, from all the cauſes which excite it. Bleeding therefore is more indicated in an inflammatory ſtate of fever, at this time, than at any other. Formerly the natural diſcharge from the uterus was truſted to, to remove a fever contracted during the time of menſtruation. But what relief can the diſcharge of four or five ounces of blood from the uterus afford, in a fever which requires the loſs of 50, or perhaps of an 100 ounces to cure it?

7. Pregnancy. The diſtention induced upon the uterus directly, and indirectly upon the whole

* Magis eſſe adjuvandos ſenes, miſſione ſanguinis dum morbus poſtulat, aut corpus eorum habitus malus eſt, quam ubi hæc (quod abſonum videbitur) juvenibus contingunt.

De Cur. per Sang. miſſionem, cap. 11. § 11.

ſyſtem by the fœtus, renders bleeding in the inflammatory ſtate of fever, more neceſſary than at other times. I have elſewhere mentioned the advantages of bleeding pregnant women, in the yellow fever. I did not learn the advantages of the practice in that diſeaſe. I bled Mrs. Philler 11 times in ſeven days, in a pleuriſy during her pregnancy, in the month of March 1783. Mrs. Fiſs, was bled 13 times in the ſpring of 1783; and Mrs. Kirby 16 times in the ſame condition by my orders in the winter of 1786, in a ſimilar diſeaſe. All theſe women recovered, and the children they carried during their illneſs, are at this time alive, and in good health.

8. Fainting after bleeding. This ſymptom is accidental in many people. No inference can be drawn from it againſt blood-letting. It often occurs after the firſt and ſecond bleedings in a fever, but in no ſubſequent bleeding, though it be repeated a dozen times. Of this I ſaw ſeveral inſtances in the yellow fever of 1794. The pulſe during the fainting, is often tenſe and full.

9. Coldneſs of the extremities, and of the whole body. This cold ſtate of fever when it occurs early, yields more readily to bleeding, than to the moſt cordial medicines.

10. Sweats

10. Sweats are ſuppoſed to forbid blood-letting. I have ſeen two inſtances of death, from leaving a paroxyſm of malignant fever to terminate itſelf by ſweating. Dr. Sydenham has taught a contrary practice in the following caſe. "While this conſtitution (ſays the Doctor) prevailed, I was called to Dr. Morice, who then practiſed in London. He had this fever, attended with profuſe ſweats and numerous petechiæ. By the conſent of ſome other phyſicians, our joint friends, he was blooded, and roſe from his bed, his body being firſt wiped dry. He found immediate relief from the uſe of a cooling diet and medicines, the dangerous ſymptoms ſoon going off; and by continuing this method he recovered in a few days." * In the ſame fever, the Doctor adds further, "For though one might expect great advantages in purſuing an indication taken from what generally proves ſerviceable (viz. *ſweating*), yet I have found by conſtant experience, that the patient not only finds no relief, but contrarywiſe, is more heated thereby; ſo that frequently a delirium, petechiæ, and other very dangerous ſymptoms immediately ſucceed ſuch *ſweats*."†

Morgagni deſcribes a malignant fever which prevailed in Italy, in which the patients died in profuſe ſweats, while their phyſicians were looking for

* Wallis's edition, Vol. I. p. 210. † Vol. I. p. 208.

a criſis

a criſis from them. Bleeding would probably have checked theſe ſweats and cured the fever.

11. Diſſolved blood, and an abſence of an inflammatory cruſt on its craſſamentum. I ſhall hereafter place diſſolved blood at the higheſt point of a ſcale, which is intended to mark the different degrees of inflammatory diatheſis in the ſyſtem. I have mentioned in the inquiry into the proximate cauſe of fever, that it is the effect of a tendency to a palſy, induced by the violent force of impreſſion upon the blood-veſſels. This appearance of the blood in certain ſtates of fever, inſtead of forbidding bleeding, is the moſt vehement call of the ſyſtem for it. Nor is the abſence of a cruſt on the craſſamentum of the blood, a proof of the abſence of inflammatory diatheſis, or a ſignal to lay aſide the lancet. On the contrary, I ſhall ſhew hereafter, that there are ſeveral appearances of the blood which indicate more morbid action in the blood-veſſels than a ſizy or inflammatory cruſt.

12. An undue proportion of ſerum to craſſamentum in the blood. This predominance of water in the blood has often checked ſufficient blood-letting. But it ſhould be conſtantly diſregarded while it is attended with thoſe ſtates of pulſe (to be mentioned hereafter) which require bleeding.

13. The

13. The preſence of petechiæ on the ſkin. Theſe, I have elſewhere ſaid, are the effects of the gangrenous ſtate of fever. Dr. Sydenham and Dr. de Haen have taught the ſafety and advantage of bleeding, when theſe ſpots are accompanied by an active pulſe. A boy of Mr. John Carrol owes his recovery from the ſmall-pox to the loſs of fifty ounces of blood, by five bleedings, at a time when nearly every pock on his arms and legs had a purple appearance. Lewis XIV. was bled five times in the ſmall-pox, when he was only thirteen years of age, and thereby probably ſaved from the grave, to the great honour and emolument of the ſingle phyſician who urged it againſt the advice of all the other phyſicians of the court. Dr. Cleghorn mentions a ſingle caſe of the ſucceſs of bleeding in the petechial ſmall-pox. His want of equal ſucceſs afterwards, in ſimilar caſes, was probably occaſioned by his bleeding too ſparingly, that is, but three or four times.

Abſceſſes and ſore breaſts, which accompany or ſucceed fever, are no objections to blood-letting, provided the pulſe indicates the continuance of inflammatory diatheſis. They depend frequently upon the ſame ſtate of the ſyſtem, as livid effuſions on the ſkin.

14. The long duration of fever. Inflammatory diatheſis is often protracted for many weeks, in the chronic

chronic ſtate of fever. It moreover frequently revives after having diſappeared, from an accidental ſtimulus affecting ſome part of the body, particularly the lungs and brain. I bled a young man of James Cameron, in the autumn of 1794, four times between the 20th and 30th days of a chronic fever, in conſequence of a pain in the ſide, accompanied by a tenſe pulſe, which ſuddenly came on after the 20th day of his diſeaſe. His blood was ſizy. His pain and tenſe pulſe were ſubdued by the bleeding, and he recovered. I wiſh this caſe to be attended to by young practitioners. The pulmonary conſumption is often the effect of a chronic fever, terminating with freſh inflammatory ſymptoms, by effuſions in the lungs. It may eaſily be prevented, by forgetting the number of the days of our patient's fever, and treating the pulmonary affection as if it were a recent complaint.

15. Tremors and ſlight convulſions in the limbs. Bark, wine, laudanum, and muſk are generally preſcribed to remove theſe ſymptoms; but to be effectual, they ſhould, in moſt caſes, be preceded by the loſs of a few ounces of blood.

16. Bleeding is forbidden after the 5th or 7th day in a pleuriſy. This prohibition was introduced into medicine at a time when a fear was entertained

tained of arreſting the progreſs of nature in preparing and expelling morbific matter from the ſyſtem. From repeated experience I can aſſert, that bleeding is ſafe in every ſtage of pleuriſy in which there is pain and a tenſe and oppreſſed pulſe; and that it has, when uſed for the firſt time after the 5th and 7th days, ſaved many lives.

17. The loſs of a ſufficient quantity of blood is often prevented by patients being apparently *worſe*, after the firſt or ſecond bleeding. This change for the worſe ſhews itſelf in ſome one or more of the following ſymptoms, viz. increaſe of heat, chills, delirium, hæmorrhages, convulſions, nauſea, vomiting, faintneſs, coma, great weakneſs, pain, a tenſe after a ſoft pulſe, and a reduction of it in force and frequency. They are all occaſioned by the ſyſtem riſing ſuddenly from a ſtate of extreme depreſſion, in conſequence of the abſtraction of the preſſure of the blood to a ſtate of vigour and activity, ſo great in ſome inſtances, as to re-produce a depreſſion below what exiſted in the ſyſtem before a vein was opened; or it is occaſioned by a tranſlation of morbid action from one part of the body to another.

The chills which follow bleeding are the effects of a change in the fever, from an uncommon to a common

common ſtate of malignity. They occur chiefly in thoſe violent caſes of fever which come on without a chilly fit.

The hæmorrhages produced by bleeding, are chiefly from the noſe, hæmorrhoidal veſſels, or uterus, and of courſe are, for the moſt part, ſafe.

Uncommon weakneſs ſucceeding blood-letting, is the effect of ſudden indirect debility induced upon the whole ſyſtem, by the cauſe before mentioned, or of a ſudden tranſlation of the excitement of the muſcles into the blood-veſſels, or ſome other part of the body. Theſe ſymptoms, together with all the others which have been mentioned, are ſo far from forbidding, that they all moſt forcibly indicate a repetition of blood-letting.

I ſhall briefly illuſtrate, by the recital of three caſes, the good effects of bleeding, in removing pain, and the preternatural ſlowneſs, and weakneſs of the pulſe, when produced by the uſe of that remedy.

In the month of June of 1795, I viſited Dr. Say in a malignant fever, attended with pleuritic ſymptoms, in conſultation with Dr. Phyſick. An acute pain in his head followed ſix ſucceſſive bleedings. After a ſeventh bleeding he had no pain. His fever ſoon afterwards

afterwards left him. In thus perſevering in the uſe of a remedy which, for ſeveral days, appeared to do harm, we were guided wholly by the ſtate of his pulſe, which uniformly indicated, by its force, the neceſſity of more bleeding.

In the autumn of 1794, I was ſent for to viſit Samuel Bradford, a young man of about 20 years of age, ſon of Mr. Thomas Bradford, who was ill with the reigning malignant epidemic. His pulſe was at 80. I drew about 12 ounces of blood from him. Immediately after his arm was tied up, his pulſe fell to 60 ſtrokes in a minute. I bled him a ſecond time, but more plentifully than before, and thereby, in a few minutes, brought his pulſe back again to 80 ſtrokes in a minute. A third bleeding the next day, aided by the uſual purging phyſic, cured him in a few days.

In the month of March 1795, Dr. Phyſick requeſted me to viſit, with him, Mrs. Fries, the wife of Mr. John Fries, in a malignant fever. He had bled her four times. After the fourth bleeding, her pulſe ſuddenly fell, ſo as ſcarce to be perceptible. I found her hands and feet cold, and her countenance ghaſtly, as a perſon's in the laſt moments of life. In this alarming ſituation, I ſuggeſted nothing to Dr. Phyſick but to follow his judgment, for I knew that he was maſter of that law of the animal economy which

which reſolved all her ſymptoms into an oppreſſed ſtate of the ſyſtem. The Doctor decided in a moment in favour of more bleeding! During the flowing of the blood, the pulſe roſe. At the end of three, ten, and ſeventeen hours it fell, and roſe again by three ſucceſſive bleedings, in all of which ſhe loſt about thirty ounces of *ſizy* blood. So great was the vigour acquired by the pulſe, a few days after the paroxyſms of depreſſion, which have been deſcribed, were relieved, that it required ſeven more bleedings to ſubdue it. I wiſh the hiſtory of theſe two caſes to be carefully attended to by the reader. I have been thus minute in the detail of them, chiefly becauſe I heard of ſeveral practitioners who, I am perſuaded, have loſt patients by attempting to raiſe a pulſe that had been depreſſed by bleeding, in a malignant fever, by means of cordial medicines, inſtead of the repeated uſe of the lancet. The practice is ſtrictly rational; for in proportion as the blood-veſſels are weakened by preſſure, the quantity of blood to be moved ſhould be proportioned to the diminution of their ſtrength.

It is remarkable that this depreſſed ſtate of the pulſe, whether induced by a paroxyſm of fever, or by blood-letting, is ſometimes attended with a ſtrong pulſation of the arteries in the bowels and head.

I have mentioned among the apparent bad effects of bleeding, that it ſometimes changes a ſoft into a tenſe pulſe. Of this I ſaw a remarkable inſtance in Captain John Barry in the autumn of 1795. After the loſs of 130 ounces of blood in a malignant yellow fever, his pulſe became ſo ſoft as to indicate no more bleeding. In this ſituation he remained for three days, but without mending as rapidly as I expected from the ſtate of his pulſe. On the 4th day he had an hæmorrhage from his bowels, from which he loſt above a pint of blood. His pulſe now ſuddenly became tenſe, and continued ſo for two or three days. I aſcribed this change in his pulſe to the veſſels of the bowels, which had been oppreſſed by congeſtion, being ſo much relieved by the hæmorrhage, as to reſume an inflammatory action. It is thus we ſee the blood-veſſels, in a common phlegmon, travel back again from a tendency to mortification, to the red colour and pain of common inflammation.

From a review of the commotions excited in the ſyſtem by bleeding, a reaſon may be given why the phyſicians who do not bleed in the depreſſed ſtate of the pulſe, have ſo few patients in what they call malignant fevers, compared with thoſe who uſe a contrary practice. The diſeaſe, in ſuch caſes, being locked up, is not permitted to unfold its true cha-

racter; and hence patients are ſaid to die of apoplexy, lethargy, colera, dyſentery, or nervous fever, who, under a different treatment, would have exhibited all the marks of an ordinary malignant fever.

In obviating the objections to blood-letting from its apparent evils, I have ſaid nothing of the apparent bad effects of other remedies. A nauſea is often rendered worſe by an emetic, and pains in the bowels are increaſed by a purge. But theſe remedies notwithſtanding maintain, and juſtly too, a high character among phyſicians.

18. Bleeding has been accuſed of bringing on a nervous, or the chronic ſtate of fever. The uſe of this remedy, in a degree ſo moderate as to obviate the putrid or gangrenous ſtate of fever only, may induce the chronic ſtate of fever; for it is the effect, in this caſe, of the remains of inflammatory diatheſis in the blood-veſſels; but when blood is drawn proportioned to the morbid action in the ſyſtem, it is impoſſible for a chronic fever to be produced by it. Even the exceſſive uſe of blood-letting, however injurious it may be in other reſpects, cannot produce a chronic fever, for it deſtroys morbid action altogether in the blood-veſſels.

19. Bleed-

19. Bleeding has been charged with being a weakening remedy. I grant that it is ſo, and in this its merit chiefly conſiſts. The morbid action of the blood-veſſels muſt be ſubdued in part, in an inflammatory fever, before tonic remedies can be given with ſafety or advantage. Now this is uſually attempted by depleting medicines, to be mentioned hereafter, or it is left to time and nature, all of which are frequently either deficient or exceſſive in their operations; whereas bleeding, by ſuddenly reducing the morbid action of the blood-veſſels to a wiſhed-for-point of debility, ſaves a great and unneceſſary waſte of excitability, and thus prepares the body for the exhibition of ſuch cordial remedies as are proper to remove the debility which prediſpoſed to the fever.

20. It has been ſaid that bleeding renders the habitual uſe of it neceſſary to health and life. This objection to blood-letting is founded upon an ignorance of the difference between the healthy and morbid action of the blood-veſſels. Where blood is drawn in health, ſuch a relaxation is induced in the blood-veſſels, as to favour the formation of plethora, which may require habitual bleeding to remove it; but where blood is drawn only in the inflammatory ſtate of fever, the blood-veſſels are reduced from a morbid degree of ſtrength to that

which is natural; in which ſtate no prediſpoſition to plethora is created, and no foundation laid for periodical blood-letting.

21. It has been ſaid that bleeding, more eſpecially where it is copious, prediſpoſes to effuſions of ſerum in the lungs, cheſt, bowels, limbs, and brain. In replying to this objection to bleeding, in my public lectures, I have addreſſed by pupils in the following language: "Aſk the poor patients who come panting to the door of our hoſpital, with ſwelled legs and hard bellies, every fall, whether they have been too copiouſly bled, and they will all tell you, that no lancet has come near their arms. Aſk the parents who ſtill mourn the loſs of children who have died in our city of the internal dropſy of the brain, whether they were deſtroyed by exceſſive blood-letting? If the remembrance of the acute ſufferings which accompanied their ſickneſs and death will permit theſe parents to ſpeak, they will tell you, that every medicine, except bleeding, had been tried to no purpoſe in their children's diſorders. Go to thoſe families in which I have practiſed for many years, and inquire, whether there is a living or a dead inſtance of dropſy having followed, in any one of them, the uſe of my lancet? Let the undertakers and grave-diggers bear witneſs againſt me, if I have ever, in the courſe of my practice, conveyed the body,

body of a ſingle dropſical patient into their hands, by exceſſive blood-letting?" No. Dropſies, like abſceſſes and gangrenous eruptions upon the ſkin, ariſe, in moſt caſes, from the *want* of ſufficient bleeding in inflammatory diſeaſes. Debility, when of a direct kind, whether induced by art or nature, ſeldom diſpoſes to effuſion. Who ever heard of dropſy ſucceeding famine? And how rarely do we ſee it accompany the extreme direct debility of old age?

"If ever bleeding kills," ſays Botallus, either directly or indirectly, through the inſtrumentality of other diſeaſes, "it is not from its exceſs, but becauſe it is not drawn in a ſufficient quantity, or at a proper time." * And again, ſays this excellent writer, "One hundred thouſand men periſh from the want of blood-letting, or from its being uſed out of time, to one who periſhes from too much bleeding, preſcribed by a phyſician." †

It is remarkable, that the dread of producing a dropſy by bleeding, is confined chiefly to its uſe in malignant fevers; for the men who urge this objection to it, do not heſitate to draw four or five quarts of blood in the cure of pleuriſy, and of a ſtrangu-

* Cap. viii. § 4. † Cap. xxxvi. § 4.

lated hernia. The habitual aſſociation of the lancet with the former of thoſe diſorders, has often cauſed me to rejoice when I have heard a patient complain of a pain in his ſide in a malignant fever. It inſured to me his conſent to the frequent uſe of the lancet, and it protected me, when it was uſed unſucceſsfully, from the clamours of the public, for few people cenſure copious bleeding in a pleuriſy.

22. Evacuating remedies of another kind have been ſaid to be more ſafe, and equally effectual, in reducing the inflammatory ſtate of fever. I ſhall recapitulate each of thoſe evacuating remedies, and then draw a comparative view of their effects with blood-letting. They are,

I. Vomits.

II. Purges.

III. Sweats.

IV. Salivation. And,

V. Bliſters.

I. Vomits have often been effectual in curing fevers of a mild character. They diſcharge offenſive

ſive and ſtimulating matters from the ſtomach; they leſſen the fulneſs of the blood-veſſels, by determining the ſerum of the blood through the pores; and they equalize the excitement of the ſyſtem, by inviting its exceſſive degrees from the blood-veſſels to the ſtomach and muſcles. But they are,

1. Uncertain in their operation, from the torpor induced by the fever upon the ſtomach.

2. They are unſafe in many conditions of the ſyſtem, as in pregnancy and a diſpoſition to apoplexy and ruptures. Life has ſometimes been deſtroyed by their inducing cramp, hæmorrhage, and inflammation in the ſtomach.

3. They are not ſubject to the controul of a phyſician, often operating more or leſs than was intended by him, or indicated by the diſeaſe.

4. They are often ineffectual in mild, and always ſo in fevers of great inflammatory action.

II. Purges are uſeful in diſcharging acrid fæces and bile from the bowels in fevers. They act moreover by creating an artificial weak part, and thus invite morbid excitement from the blood-veſſels to the bowels. They likewiſe leſſen the quantity of

blood by preventing freſh acceſſions of chyle, being added to it; but like vomits they are,

1. Uncertain in their operation; and from the ſame cauſe. Many ounces of ſalts and caſtor oil, and whole drachms of calomel and jalap, have often been given, without effect, to remove the coſtiveneſs which is connected with the malignant ſtate of fever.

2. They are not ſubject to the direction of a phyſician, with reſpect to the time of their operation, or the quantity or quality of matter they are intended to diſcharge from the bowels.

3. They are unſafe in the advanced ſtage of fevers. Dr. Phyſick informed me that three patients died in the water cloſet under the operation of purges in St. George's hoſpital during his attendance upon it. I have ſeen death in ſeveral inſtances ſucceed a plentiful ſpontaneous ſtool in debilitated habits.

III. Sweating was introduced into practice at a time when morbific matter was ſuppoſed to be the proximate cauſe of fever. It acts, not by expelling any thing excluſively morbid from the blood, but by abſtracting a portion of its fluid parts, and thus reducing the action of the blood-veſſels. This mode of curing fever is ſtill faſhionable in genteel life. It excites

excites no fear, and offends no ſenſe. The ſweating remedies have been numerous, and faſhion has reigned as much among them, as in other things. Alexipharmic waters, and powders, and all the train of ſudorific medicines, have lately yielded to the different preparations of antimony, particularly to James's powder. I object to them all,

1. Becauſe they are uncertain; large and repeated doſes of them being often given to no purpoſe.

2. Becauſe they are ſlow, and diſagreeable, where they ſucceed in curing fever.

3. Becauſe, like vomits and purges, they are not under the direction of a phyſician, with reſpect to the quantity of fluid diſcharged by them.

4. Becauſe they are ſometimes, even when moſt profuſe, ineffectual in the cure of fever.

5. The preparations of antimony lately employed for the purpoſe of exciting ſweats, are by no means ſafe. They ſometimes convulſe the ſyſtem by a violent puking. Even the boaſted James's powder has done great miſchief. Dr. Goldſmith and Mr. Howard, it is ſaid were deſtroyed by it.

IV. Mer-

IV. Mercury, the Sampſon of the Materia Medica, after having ſubdued the venereal diſeaſe, the tetanus, and many other formidable diſorders, has lately added to its triumphs and reputation, by overcoming the inflammatory and malignant ſtate of fever. I ſhall confine myſelf in this place to its depleting operation when it acts by exciting a ſalivation. From half a pound to two pounds of fluid, are diſcharged by it in a day. The depletion in this way is gradual, whereby fainting is prevented. By exciting and inflaming the glands of the mouth and throat, excitement and inflammation are abſtracted from more vital parts. In morbid congeſtion and excitement in the brain, a ſalivation is of eminent ſervice, from the proximity of the diſcharge to the part affected. But I object to it as an excluſive evacuant in the cure of fever.

1. Becauſe it is ſometimes impoſſible by the largeſt doſes of mercury, to excite it, when the exigencies of the ſyſtem render it moſt neceſſary.

2. Becauſe it is not ſo quick in its operation, as to be proportioned to the rapid progreſs of the malignant ſtate of fever.

3. Becauſe it is at all times a diſagreeable, and frequently a painful remedy, more eſpecially where the teeth are decayed.

4. Becauſe

4. Becauſe it cannot be proportioned in its duration, or in the quantity of fluid diſcharged by it, to the violence, or changes in the fever.

Dr. Chiſholm relied, for the cure of the Boullam fever at Grenada, chiefly upon this evacuation. I have mentioned the ratio of ſucceſs which attended it.

V. BLISTERS are uſeful in depleting from thoſe parts which are the ſeats of topical inflammation. The relief obtained by them in this way, more than balances their ſtimulus upon the whole ſyſtem. I need hardly ſay, that their effects in reducing the morbid and exceſſive action of the blood-veſſels are very feeble. To depend upon them in caſes of great inflammatory action, is as unwiſe, as it would be to attempt to bale the water from a leaky and ſinking ſhip by the hollow of the hand, inſtead of diſcharging it by two or three pumps.

Abſtemious diet has ſometimes been preſcribed as a remedy for fever. It acts directly by the abſtraction of the ſtimulus of food from the ſtomach, and indirectly by leſſening the quantity of blood. It can bear no proportion in its effects, to the rapidity, and violence of an inflammatory fever. In chronic fever ſuch as occurs in the pulmonary conſumption,

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it has often been tried to no purpoſe. Long before it reduces the pulſe, it often induces ſuch a relaxation of the tone of the ſtomach and bowels as to accelerate death. To depend upon it therefore in the cure of inflammatory fever whether acute or chronic, is like truſting to the rays of the ſun to exhale the water of an overflowing tide, inſtead of draining it off immediately by digging a hole in the ground.

Bleeding has great advantages over every mode of depleting that has been mentioned.

1. It abſtracts one of the exciting cauſes, viz. the ſtimulus of the blood from the ſeat of fever. I have formerly illuſtrated this advantage of blood-letting by comparing it to the abſtraction of a grain of ſand from the eye to cure an opthalmia. The other depleting remedies are as indirect and circuitous in their operation in curing fever, as vomits and purges would be to remove an inflammation in the eye, while the grain of ſand continued to irritate it.

2. Blood-letting is quick in its operation, and may be accommodated to the rapidity of fever, when it manifeſts itſelf in apoplexy, palſy, and ſyncope.

3. It is under the command of a phyſician. He may bleed *when* and *where* he pleaſes, and may ſuit

ſuit the *quantity* of blood he draws, exactly to the condition of his patient's ſyſtem.

4. It may be performed with the leaſt attendance of nurſes or friends. This is of great importance to the poor at all times, and to the rich during the prevalence of contagious and mortal epidemics.

5. It diſturbs the ſyſtem much leſs than any of the other modes of depleting, and therefore is beſt accommodated to that ſtate of the ſyſtem, in which patients are in danger of fainting or dying upon being moved.

6. It is a more delicate depleting remedy than moſt of thoſe which have been mentioned, particularly vomits, purges, and a ſalivation.

7. There is no immediate danger to life from its uſe. Patients have ſometimes died under the operation of vomits and purges, but I never ſaw nor heard an inſtance of a patient's dying in a fainty fit, brought on by bleeding.

8. It is leſs weakening, when uſed to the extent that is neceſſary to cure, than the ſame degrees of vomiting, purging, and ſweating.

9. Con-

9. Convaleſcence is more rapid and more perfect after bleeding, than after the ſucceſsful uſe of any of the other evacuating remedies.

By making uſe of blood-letting in fevers, we are not precluded from the benefits of the other evacuating remedies. Some of them are rendered more certain and more effectual by it, and there are caſes of fever, in which the combined or ſucceſſive applica- of them all, is barely ſufficient to ſave life.

To rely upon any one evacuating remedy, to the excluſion of the others, is like truſting to a pair of oars in a ſea voyage, inſtead of ſpreading every ſail of a ſhip.

I ſuſpect the diſputes about the eligibility of the different remedies which have been mentioned, have ariſen from an ignorance that they all belong to one claſs, and that they differ only in their force and manner of operation. Thus the phyſicians of the laſt century aſcribed different virtues to ſalts of different names, which the chemiſts of the preſent day have taught us are exactly the ſame, and differ only in the manner of their being prepared.

Having replied to the principal objections to blood-letting, and ſtated its comparative advantages over other

other modes of depletion, I proceed next to mention the circumſtances which ſhould regulate the uſe of it. Theſe are,

I. The ſtate of the PULSE.

The following ſtates of the pulſe indicate the neceſſity of bleeding.

1. A full, frequent, and tenſe pulſe, ſuch as occurs in the pulmonary, rheumatic, gouty, phrenitic, and maniacal ſtates of fever.

2. A full, frequent, and jerking pulſe, without tenſion, ſuch as frequently occurs in the vertiginous, paralytic, apoplectic, and hydropic ſtates of fever.

3. A ſmall, frequent, but tenſe pulſe, ſuch as occurs in the chronic, pulmonary, and rheumatic ſtates of fever.

4. A tenſe and *quick* pulſe, without much preternatural frequency. This ſtate of the pulſe is common in the yellow fever.

5. A ſlow but tenſe pulſe, ſuch as occurs in the apoplectic, hydrocephalic, and malignant ſtates of fever, in which its ſtrokes are from 60, to 9, in a minute.

6. An

6. An uncommonly frequent pulſe, without much tenſion, beating from 120 to 170 or 180 ſtrokes in a minute. This ſtate of the pulſe occurs likewiſe in the malignant ſtates of fever.

7. A ſoft pulſe, without much frequency or fulneſs. I have met with this ſtate of the pulſe in affections of the brain, and in that ſtate of pulmonary fever which is known by the name of pneumonia notha. It ſometimes, I have remarked, becomes tenſe after bleeding.

8. An intermitting pulſe.

9. A depreſſed pulſe.

10. An imperceptible pulſe. The ſlow, intermitting, depreſſed, and imperceptible ſtates of the pulſe, are ſuppoſed excluſively to indicate congeſtion in the brain. But they are all, I believe, occaſioned likewiſe by great exceſs of ſtimulus acting upon the heart and arteries. A pulſe more tenſe in one arm than in the other, I have generally found to attend a morbid ſtate of the brain. Much yet remains to be known of the ſigns of a diſeaſe in the brain, by the ſtates of the pulſe; hence Mr. Hunter has juſtly remarked, that "In inflammation of the brain, the pulſe varies more than in inflamma-

tions of any other part; and perhaps we are led to judge of inflammation there, more from *other* ſymptoms than the pulſe." *

The ſlow, uncommonly frequent, intermitting, and imperceptible ſtates of the pulſe which require bleeding, may be diſtinguiſhed from the ſame ſtates of the pulſe, which ariſe from direct debility or an exhauſted ſtate of the ſyſtem, and that forbid bleeding by the following marks.

1. They occur in the beginning of a fever.

2. They occur in the paroxyſms of fevers which have remiſſions and exacerbations.

3. They ſometimes occur after blood-letting, from cauſes formerly mentioned.

4. They ſometimes occur, and continue during the whole courſe of an inflammation of the ſtomach and bowels. And,

5. They occur in relapſes, after the criſis of a fever.

The other ſtates of the pulſe indicate bleeding in every ſtage of fever, and in every condition of the

* Chap. iii. 9.

ſyſtem. I have taken notice, in another place, of the circumſtances which render it proper in the advanced ſtage of chronic fever.

If all the ſtates of pulſe which have been enumerated, indicate bleeding, it muſt be an affecting conſideration to reflect, how many lives have been loſt by phyſicians limiting the uſe of the lancet only to the tenſe or full pulſe!

I wiſh it comported with the propoſed limits of this eſſay to illuſtrate and eſtabliſh, by the recital of caſes, the truth of theſe remarks upon the indications of bleeding from the pulſe. It is the trueſt index of the ſtate of the ſyſtem, and when it is perfectly underſtood, it never deceives. Its frequency, (unconnected with its other ſtates), being under the influence of diet, motion, and the paſſions of the mind, is of the leaſt conſequence. In counting the number of its ſtrokes, we are apt to be diverted from attending to its irregularity and force; and in theſe, it ſhould always be remembered, fever chiefly conſiſts. The knowledge acquired by attending to theſe ſtates of the pulſe is ſo definite and uſeful, and the circumſtances which ſeduce from a due attention to them are ſo erroneous in their indications, that I have ſometimes wiſhed the Chineſe cuſtom of preſcribing, from feeling the pulſe only, without

ſeeing

ſeeing or converſing with the patient, were impoſed upon all phyſicians.

To render the knowledge of the indications of blood-letting from the ſtate of the pulſe as definite and correct as poſſible, I ſhall add, for the benefit of young practitioners, the following directions for feeling it.

1. Let the arm be placed in a ſituation in which all the muſcles which move it ſhall be completely relaxed; and let it, at the ſame time, be free from the preſſure of the body upon it.

2. Feel the pulſe in all obſcure or difficult caſes, in both arms.

3. Apply all the fingers of one hand, when practicable, to the pulſe. For this purpoſe it will be moſt convenient to feel the pulſe of the right hand with your left, and of the left hand with your right.

4. Do not decide upon blood-letting in difficult caſes, until you have felt the pulſe for ſome time. The Chineſe phyſicians never preſcribe until they have counted 49 ſtrokes.

5. Feel the pulſe at the intervals of four or five minutes, when you ſuſpect that its force has been

varied by any circumſtance not connected with the diſeaſe, ſuch as emotions of the mind, exerciſe, eating, drinking, and the like.

6. Feel the pulſations of the arteries in the temples and in the neck, when the pulſe is depreſſed or imperceptible in the wriſts.

7. Requeſt ſilence in a ſick room, and cloſe your eyes in feeling a pulſe in difficult caſes. By ſo doing, you will concentrate the ſenſations of your ears and eyes, in your fingers.

In judging of the ſtates of the pulſe which have been enumerated, it will be neceſſary always to remember the natural difference in its frequency and force in old people and children; alſo in the morning and evening, and in the ſleeping and waking ſtates of the ſyſtem.

But to return.

II. Regard ſhould be had to the character of the reigning epidemic, in deciding upon blood-letting. If the prevailing fever be of a highly inflammatory nature, bleeding may be uſed with more ſafety in caſes where the indications of it from the pulſe are ſomewhat doubtful. The character of a previous epidemic ſhould likewiſe direct the uſe of the lancet.

The

The peſtilential fever which followed the plague in London in 1665, Dr. Sydenham ſays, yielded only to blood-letting. It is equally neceſſary in all the febrile diſeaſes which ſucceed malignant fevers.

III. The conſtitution of a patient, and more eſpecially his habits with reſpect to blood-letting, ſhould be taken into conſideration, in preſcribing it. If he be plethoric, and accuſtomed to bleeding in former indiſpoſitions, it will be more neceſſary than in oppoſite ſtates and habits of the ſyſtem.

IV. Regard ſhould be had to the country or place from which perſons affected with fevers have lately arrived, in preſcribing the loſs of blood. Fevers in America are more inflammatory than fevers in perſons of equal rank in Great Britain. From a want of attention to this circumſtance, I ſaw a common pleuriſy end in an abſceſs in the lungs, in a ſea-captain in the city of London, in the year 1769, who was attended by a phyſician of the firſt reputation in England. He was bled but once. His cure was afterwards truſted to ſudorific draughts. His pulſe and his American conſtitution indicated the loſs of 50 or 60 ounces of blood.

V. After blood-letting has been performed, the appearances of the blood ſhould be attended to,

in order to judge of the propriety of repeating it. I ſhall briefly deſcribe theſe appearances, and arrange them in the order in which they indicate the different degrees of inflammatory diatheſis, beginning with the higheſt.

1. Diſſolved blood. It occurs in the malignant ſtates of fever. I have ſeen it ſeveral times in the pleuriſy, and have once heard of it in a caſe of gout. I have aſcribed this decompoſition of the blood to ſuch a violent degree of ſtimulus upon the blood-veſſels, as to diſpoſe them to a paralytic ſtate. It is generally conſidered as a ſignal to lay aſide the lancet. If it occur in the firſt ſtage of a fever, it indicates a very oppoſite practice. By repeated bleedings, the veſſels recover their natural action, and the blood becomes *reduced* to its original texture. Of this I have had frequent experience ſince the year 1793. It required three ſucceſſive bleedings to reſtore the blood from a diſſolved to a coagulable ſtate in Mr. Benton. It afterwards became very ſizy. If this diſſolved blood appear towards the cloſe of a malignant fever, no other benefit than the protraction of life for a day or two, or an eaſy death, can be expected from repeating the bleeding, even though it be indicated by a tenſe pulſe; for the viſcera are generally ſo much choaked by the continuance of violent action

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in the blood-veſſels, that they are ſeldom able to diſcharge the blood which diſtends them, into the cavity in the veſſels which is created by the abſtraction of blood from a vein. There is ſome variety in the appearance of this ſtate of the blood, which indicates more or leſs violent preſſure upon the blood-veſſels. It threatens moſt danger to life when it reſembles molaſſes in its conſiſtence. The danger is leſs when the part which is diſſolved occupies the bottom of the bowl, and when its ſurface is covered with a fizy pellicle or coat.

Does not the reſtoration of the blood from its diſorganized ſtate, by means of bleeding, ſuggeſt an idea of a ſimilar change being practicable in the ſolids, when they are diſorganized by diſeaſe? And are we not led hereby to an animating view of the extent and power of medicine?

2. Blood of a ſcarlet colour, without any ſeparation into craſſamentum or ſerum, indicates a ſecond degree of inflammatory action. It occurs likewiſe in the malignant ſtate of fever.

3. Blood in which part of the craſſamentum is diſſolved in the ſerum, forming a reſemblance to what is called the lotura carnium, or the waſhings of fleſh in water.

4. Craſſamentum ſinking to the bottom of a bowl in yellow ſerum.

5. Craſſamentum floating in ſerum which is at firſt turbid, but which afterwards becomes yellow and tranſparent by depoſiting certain red and fiery particles of the blood in the bottom of the bowl.

6. Sizy blood, or blood covered with a buffy coat. The more the craſſamentum appears in the form of a cup, the more inflammatory action is ſaid to be indicated by it. This appearance of the blood occurs in all the common ſtates of inflammatory fever. It occurs too in the mild ſtate of malignant fevers, and in the cloſe of ſuch of them as have been violent. It is not always connected with the common inflammatory ſtate of the pulſe, for I have obſerved it occaſionally in moſt of the different ſtates of the pulſe which have been deſcribed. The appearance of this buffy coat on the blood in the yellow fever, is always favourable. It ſhews the diſeaſe to be tending from an uncommon, to a *common* degree of inflammatory diatheſis.

It would ſeem, from theſe facts, as if the power of coagulation in the blood was leſſened in an exact ratio to the increaſe of ſtimulus upon the blood-veſſels, and that it was increaſed in proportion to the

the diminution of that ſtimulus, to that degree of action which conſtitutes what I have called *common* inflammatory action.

Here as upon a former occaſion we may ſay with concern, if bleeding be indicated by all the appearances of the blood which have been enumerated, how many lives have been loſt by phyſicians limiting the uſe of the lancet to thoſe caſes only, where the blood diſcovered an inflammatory cruſt!

Theſe remarks upon the relative ſigns of inflammatory action in the blood-veſſels, ſhould be admitted with a recollection that they are all liable to be varied by a moderate, or violent exacerbation of fever, by the ſize of the ſtream of blood, and by the heat, coldneſs, and form of the cup into which the blood flows. This occaſional uncertainty in the indications of the ſtate of fever by the blood, ſhould lead us back to the PULSE. When time, and more attention to this index of the ſtate of the ſyſtem in fevers, ſhall have brought to light all the knowledge that the pulſe is capable of imparting, the appearances of the blood in fevers, will be regarded as little as the appearances of the urine.

VI. Blood-letting ſhould always be copious where there is danger from congeſtion or inflammation, in

in vital parts. This danger is indicated moſt commonly by pain; but there may be congeſtion in the liver, bowels, and even in the head, without pain. In theſe caſes, the ſtate of the pulſe ſhould always govern the uſe of the lancet.

VII. What quantity of blood may be taken, with ſafety, from a patient in an inflammatory fever? To anſwer this queſtion it will be neceſſary to remark, 1. That in a perſon of an ordinary ſize, there are ſuppoſed to be contained between 25 and 28 pounds of blood, and 2. That much more blood may be taken when the blood-veſſels are in a ſtate of morbid excitement and excitability, than at any other time. One of the uſes of the blood is to ſtimulate the blood-veſſels, and thereby to aſſiſt in originating, and preſerving animal life. In a healthy ſtate of the veſſels, the whole maſs of the blood is neceſſary for this purpoſe; but in their ſtate of morbid excitability, a much leſs quantity of blood than what is natural, (perhaps in ſome caſes four or five pounds) are ſufficient to keep up an equal and vigorous circulation. Thus very ſmall portions of light, and ſound, are ſufficient to excite viſion and hearing in an inflamed, and highly excitable ſtate of the eyes and ears. Thus too, a ſingle glaſs of wine will often produce delirium in a fever in a man, who, when in health, is in the habit of drinking a bottle

a bottle every day without having his pulſe quickened by it.

An ignorance of the quantity of blood which has been drawn by deſign, or loſt by accident, has contributed very much to encourage prejudices againſt blood-letting. Mr. Cline drew 320 ounces of blood in 20 days from a patient in St. Thomas's hoſpital, who laboured under a contuſion of the head. But this quantity is ſmall compared with the quantity loſt by a number of perſons whoſe caſes are recorded by Dr. Haller.* I ſhall mention a few of them. One perſon loſt 9 pounds of blood, a ſecond 12, a third 18, and a fourth 22, from the noſe at one time. A fifth loſt 12 pounds by vomiting in one night, and a ſixth 22 from the lungs. A gentleman at Angola loſt between 3 and 4 pounds daily from his noſe. To cure it he was bled 97 times in one year. A young woman was bled 1020 times in 19 years, to cure her of plethora which diſpoſed her to hyſteria. Another young woman loſt 125 ounces of blood by a natural hæmorrhage every month. To cure it, ſhe was bled every day, and every other day for 14 months. In none of theſe inſtances, was death the conſequence of theſe great evacuations of blood. On the contrary, all the per-

* Elementa Phyſiologiæ, vol. iv. p. 45.

ſons

ſons alluded to, recovered. Many ſimilar inſtances of the ſafety, and even benefit of profuſe diſcharges of blood by nature and art, might be mentioned from other authors. I ſhall inſert only one more, which ſhall be taken from Dr. Sydenham's account of the cure of the plague. " Among the other calamities of the civil war which afflicted this nation, the plague alſo raged in ſeveral places, and was brought by accident from another place to Dunſtar Caſtle in Somerſetſhire, where ſome of the ſoldiers dying ſuddenly, with an eruption of ſpots, it likewiſe ſeized ſeveral others. It happened at that time that a ſurgeon who had travelled much in foreign parts, was in the ſervice there, and applied to the governor for leave to aſſiſt his fellow ſoldiers who were afflicted with this dreadful diſeaſe in the beſt manner he was able; which being granted, he took ſo large a quantity of blood from every one at the beginning of the diſeaſe, and before any ſwelling was perceived, that they were ready to faint, and drop down, for he bled them all ſtanding, and in the open air and had no veſſel to meaſure the blood, which falling on the ground, the quantity each perſon loſt, could not of courſe be known. The operation being over, he ordered them to lie in their tents; and though he gave no kind of remedy after bleeding, yet of the numbers that were thus treated, not a ſingle perſon died. I had this relation from colonel

colonel Francis Windham a gentleman of great honor, and veracity, and at this time governor of the Caſtle." *

Again. An ignorance of the rapid manner in which blood is regenerated when loſt or drawn, has helped to keep up prejudices againſt blood-letting. A perſon (Dr. Haller ſays) loſt five pounds of blood daily from the hæmorrhoidal veſſels for 62 days, and another 75 pounds of blood in 10 days. The loſs each day was ſupplied by freſh quantities of aliment.

Theſe facts I hope, will be ſufficient to eſtabliſh the ſafety and advantages of plentiful blood-letting in caſes of violent fever; alſo to ſhew the fallacy and danger of that practice which attempts the cure of ſuch caſes of fever, by what is called *moderate* bleeding. There are, it has been ſaid, no half truths in government. It is equally true, that there are no half truths in medicine. This half-way practice of moderate bleeding, has kept up the mortality of peſtilential fevers in all ages, and in all countries.

I have combated this practice elſewhere, † and have aſſerted, upon the authority of Dr. Syden-

* Vol. I. p. 131. † Account of the Yellow Fever, in 1793.

ham,

ham, that it is much better not to bleed at all, than to draw blood disproportioned in quantity to the violence of the fever. If the state of the pulse be our guide, the continuance of its inflammatory action, after the loss of even an 100 ounces of blood, indicates the necessity of more bleeding, as much as it did the first time a vein was opened. In the use of this remedy it may be truly said, as in many of the enterprizes of life, that nothing is done, while any thing remains to be done. Bleeding should be repeated while the symptoms which at first indicated it continue, should it be until four-fifths of the blood contained in the body are drawn away. In this manner we act in the use of other remedies. Who ever leaves off giving purges in a colic, attended with costiveness, before the bowels are opened? or who lays aside mercury as a useless medicine, because a few doses of it do not cure the venereal disease?

I shall only add under this head, that I have always observed the cure of a malignant fever to be most complete, and the convalescence to be most rapid, when the bleeding has been continued until a *paleness* is induced in the face, and until the patient is able to sit up without being fainty. After these circumstances occur, a moderate degree of force in the pulse will gradually wear itself away without doing any harm.

VIII. In

VIII. In drawing blood, the quantity ſhould be large or ſmall at a time, according to the ſtate of the ſyſtem. In caſes where the pulſe acts with force and freedom, from 10 to 20 ounces of blood may be taken at once; but in caſes of great indirect debility, where the pulſe is depreſſed, it will be better to take away but a few ounces at a time, and to repeat it three or four times a-day. By this means the blood-veſſels more *gradually* recover their vigour, and the apparent bad effects of bleeding are thereby prevented. Perhaps the ſame advantages might be derived in many other caſes from the gradual abſtraction of ſtimuli, that are derived from the gradual increaſe of their force and number, in their application to the body. In an inflammatory fever, the character of which is not accurately known, it is ſafeſt to begin with moderate bleeding, and to increaſe it in quantity, according as the violence and duration of the diſeaſe ſhall make it neceſſary. In fevers and other diſeaſes which run their courſes in a few days or hours, and which threaten immediate diſſolution, there can be no limits fixed to the quantity of blood which may be drawn at once, or in a ſhort time. Botallus drew 3, 4, and 5 pints in a day in ſuch caſes. Dr. Phyſick drew 90 ounces by weight from Dr. Dewees, in a ſudden attack of the apoplectic ſtate of fever, at one bleeding, and there-

by

by reſtored him ſo ſpeedily to health, that he was able to attend to his buſineſs in three days afterwards. In chronic ſtates of fever, of an inflammatory type, ſmall and frequent bleedings are to be preferred to large ones. We uſe mercury, antimony, and diet drinks as alteratives in many diſeaſes with advantage. We do not expect to cure certain diſeaſes of debility by two or three immerſions in a cold bath. We perſiſt with patience in preſcribing all the above remedies for months and years, before we expect to reap the full benefits of them. Why ſhould not blood-letting be uſed in the ſame way, and have the ſame chance of doing good. I have long ago adopted this *alterative* mode of uſing it, and I can now look around me, and with pleaſure behold a number of perſons of both ſexes who owe their lives to it. In many caſes I have preſcribed it once in two or three months for ſeveral years; and in ſome I have adviſed it every two weeks, for ſeveral months.

There is a ſtate of fever in which an exceſs in the action of the blood-veſſels is barely perceptible, but which often threatens immediate danger to life, by a determination of blood to a vital part. In this caſe, I have frequently ſeen the ſcale turn in favour of life, by the loſs of but four or five ounces of blood. The preſſure of this, and even of a much

leſs quantity of blood in the cloſe of a fever, I believe as effectually deſtroys life, as the exceſs of ſeveral pounds does in its beginning.

In caſes where bleeding does not cure, it may be uſed with advantage as a *palliative* remedy. Many diſeaſes induce death in a full and highly excited ſtate of the ſyſtem. Here opium does harm, while bleeding affords certain relief. It belongs to this remedy, in ſuch caſes, to eaſe pain, to prevent convulſions, to compoſe the mind, to protract the uſe of reaſon, to induce ſleep, and thus to ſmooth the paſſage out of life.

IX. Bleeding from an artery, commonly called arteriotomy, would probably have many advantages over veneſection, could it be performed at all times with eaſe and ſafety. Blood diſcharged by hæmorrhages affords more relief in fevers than an equal quantity drawn from a vein, chiefly becauſe it is poured forth in the former caſe from a ruptured artery. I mentioned formerly, that Dr. Mitchell had found blood drawn from an artery to be what is called denſe, at a time when that which was drawn from a vein in the ſame perſons, was diſſolved. This fact may poſſibly admit of ſome application. In the cloſe of malignant fevers, where bleeding has been omitted in the beginning of the diſorder, blood

drawn from a vein is generally ſo diſſolved, as to be beyond the reach of repeated bleedings to reſtore it to its natural texture. In this caſe, arteriotomy might probably be performed with advantage. The arteries, which retain their capacity of life longer than the veins, by being relieved from the immediate preſſure of blood upon them, might be enabled ſo to act upon the torpid veins, as to reſtore their natural action, and thereby to arreſt departing life. Arteriotomy might further be uſed with advantage in children, in whom it is difficult, and ſometimes impracticable to open a vein.

X. Much has been ſaid about the proper place from whence blood ſhould be drawn. Bleeding in the foot was much uſed formerly, in order to excite a revulſion from the head and breaſt; but our preſent ideas of the circulation of the blood have taught us, that it may be drawn from the arm with equal advantage in nearly all caſes. To bleeding in the foot there are the following objections: 1. The difficulty of placing a patient in a ſituation favourable to it. 2. The greater danger of wounding a tendon in the foot than in the arm. And, 3. The impoſſibility of examining the blood after it is drawn; for in this mode of bleeding, the blood generally flows into a baſon or pail of water.

Under

Under this head I ſhall decide upon the method of drawing blood by means of cups, in the inflammatory ſtate of fever. Where an inflammatory fever ariſes from local affection, or from contuſion in the head or breaſt, or from a morbid excitement in thoſe, above other parts of the arterial ſyſtem, they may be uſeful; but where local affection is a ſymptom of general and equable fever only, it can ſeldom be neceſſary, except where bleeding from the arm has been omitted, or uſed too ſparingly in the beginning of a fever; by which means ſuch fixed congeſtion often takes place, as will not yield to general bleeding.

XI. Much has been ſaid likewiſe about the proper time for bleeding in fevers. It may be uſed at all times, when indicated by the pulſe and other circumſtances, in continual fevers; but it ſhould be uſed chiefly in the paroxyſms of ſuch as intermit. I have conceived this practice to be of ſo much conſequence, that when I expect a return of the fever in the night, I requeſt one of my pupils to ſit up with my patients all night, in order to meet the paroxyſm, if neceſſary, with the lancet. But I derive another advantage from fixing a centinel over a patient in a malignant fever. When a paroxyſm goes off in the night, it often leaves the ſyſtem in a ſtate of ſuch extreme debility as to

endanger life. In this caſe, from 5 to 10 drops of laudanum, exhibited by a perſon who is a judge of the pulſe, obviate this alarming debility, and often induce eaſy and refreſhing ſleep. By treating the human body like a corded inſtrument, in thus occaſionally relaxing or bracing the ſyſtem, according to the exceſs or deficiency of ſtimulus in thoſe hours in which death moſt frequently occurs, I think I have been the means of ſaving ſeveral valuable lives.

I regret that the limits I have fixed to this defence of blood-letting will not admit of my applying the principles which I have delivered, to all the inflammatory ſtates of fever. I have ſhewn, in a former publication, the advantages of bleeding in the hydropic ſtate of fever. In a future eſſay, I hope to eſtabliſh its efficacy in the gouty and maniacal ſtates of fever. I have ſaid that madneſs is the effect of a chronic inflammation in the brain. Its remedy, of courſe, ſhould be frequent and copious blood-letting. Phyſical and moral evil are ſubject to ſimilar laws. The madſhirt, and all the common means of coercion are as improper ſubſtitutes for bleeding in madneſs, as the whipping-poſt and pillory are for ſolitary confinement and labour, in the cure of vice. The pulſe ſhould govern the uſe of the lancet in this,

this, as well as in all the *ordinary* ſtates of fever. It is the dial-plate of the ſyſtem. But in the *miſplaced* ſtates of fever, the pulſe, like folly in old age, often points at a different mark from nature. In all ſuch caſes, we muſt conform our practice to that which has been ſucceſsful in the reigning epidemic. A ſingle bleeding, when indicated by this circumſtance, often converts a fever from a ſuffocated or latent, to a ſenſible ſtate, and thus renders it a more ſimple and manageable diſeaſe.

It is worthy of conſideration here, how far local diſeaſes, which have been produced by fevers, might be cured by re-exciting the fever. Sir William Jones ſays the phyſicians in Perſia always begin the cure of the leproſy by blood-letting. * Poſſibly this remedy diffuſes the diſeaſe through the blood-veſſels, and thereby expoſes it to be more eaſily acted upon by other remedies.

I intended to have enlarged upon the good effects of bleeding in ſeveral diſeaſes which are not accompanied with fever, but having treſpaſſed too long upon the reader's patience, by the minuteneſs of my details upon this ſubject, I ſhall take notice at preſent of its efficacy in but the five following morbid ſtates of the ſyſtem.

* Aſiatic Eſſays.

1. During the period in which the menſes ceaſe to flow, there is always a morbid fulneſs and excitement in the blood-veſſels; hence the head achs, coughs, dropſies, hæmorrhages, glandular obſtructions, and cancers, which occur in that ſtage of life. They may all be prevented by frequent and moderate blood-letting.

2. Pain is probably not connected neceſſarily with child-bearing. Many of the other evils inflicted upon the human race, in conſequence of the diſobedience of our firſt parents, have been leſſened or eradicated by the ingenuity of man. The pain of child-bearing, travellers tell us, is much leſſened among the Turkiſh women, by their taking ſweet oil (which acts as a purge) during their pregnancy. Direct debility, whether induced by faſting or long and ſlow diſeaſes, tends alike to mitigate the pains of labour. Theſe facts have led me to inquire, whether blood-letting does not produce the ſame effect. I have often obſerved labours to be ſhort and comparatively eaſy, which have ſucceeded a fever that has been cured by bleeding. Upon my mentioning this fact to Dr. Dewees, he informed me that he had often bled when parturition was ſlow, and that he had always found that he thereby both ſhortened and leſſened the pains of labour.

3. I have

3. I have ſaid that there is but one remote cauſe of fever. Of courſe there can be no eſſential difference between the ſtimulus of the ſaliva of a rabid animal, and the ſtimulus of contagion or miaſmata, in inducing morbid actions in the ſyſtem. The heat, thirſt, quick and tenſe pulſe, and local effuſions which occur in the HYDROPHOBIA, indicate it to be a ſpaſmodic ſtate of fever. As there is but one remote,* and one proximate cauſe of fever, ſo there is but one method of curing it, and that is by reducing morbid action when it is exceſſive by depletion, and afterwards removing debility by tonic remedies. I can ſee no reaſon why the hydrophobia ſhould not yield to theſe obvious, and univerſal principles in medicine. From its great force, it is probable it will require the moſt copious bleeding, and afterwards the moſt powerful tonics to cure it of any diſorder in the world.

4. In diſlocations of bones which reſiſt both ſkill and force, it has been ſuggeſted that bleeding, un-

* The exciting cauſe of fever, which may be conſidered as forming an exception to this ſimple view of its remote cauſe, is nothing but a reinforcement of the remote cauſe, when it is too feeble to excite fever. It generally acts as a ſtimulus, and when it acts by abſtracting a natural ſtimulus from the body, it throws ſuch a balance of force into the ſcale of the remote cauſe, as to enable it to induce fever.

til fainting is induced, would produce ſuch a relaxation in the muſcles as to favour their reduction. This principle was happily applied in the winter of 1795, by Dr. Phyſick in the Pennſylvania hoſpital, in a caſe of a diſlocated humerus of two months continuance. The Doctor bled this patient until he fainted, and then reduced his ſhoulder in leſs than a minute, with a very ſmall exertion of force.

5. I have elſewhere ſpoken in favour of blood-letting in ſome of the diſeaſes of old age.* The palſy, apoplexy, cough, and colic, ſo common among old people, might, I believe be prevented in many inſtances by the occaſional, but moderate uſe of this remedy.

Thus have I finiſhed my defence of blood-letting as a remedy for certain diſeaſes. Let not the reader ſuppoſe that I am unduly attached to it. I have little reaſon to be ſo, for the dread of my uſing it in every diſeaſe, and the falſe reports of my uſing it in equal degrees in diſeaſes of oppoſite characters, have deprived me probably of many thouſand pounds in the courſe of my life. But my predilection for the lancet above all other depleting remedies, has affected my happineſs, much more than my intereſt.

* Medical Inquiries, and Obſervations, Vol. II.

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It has made the duties of my profeſſion (which would otherwiſe be pleaſant) extremely painful to me. Often have I been forced to ſubmit my judgment to the fears and prejudices of my patients, and thereby to conſume days and weeks in curing a diſeaſe, which might have been cured in ſome inſtances by the loſs of a few ounces of blood, in a day or an hour. Often, when the appearance of danger has made the preſcription of blood-letting neceſſary to ſave life, have I read diſaffection to it in dejected looks, or tears, and ſometimes heard it in the ſcreams of a whole family. And often have I been reproached for killing people by bleeding, who have died, only becauſe they ſubmitted to the remedy when it was too late, or becauſe it was too ſparingly adminiſtered to do them ſervice. Nor have the teſtimonies of whole families and neighbourhoods who have been cured of malignant fevers by bleeding, balanced the diſcredit of the loſs of the few patients in whom it was thus improperly uſed; for the recoveries in thoſe caſes have been conſidered as remarkable, only becauſe the patients ſurvived the frequent uſe of the lancet.

It was in conſequence of the violence that blood-letting offered to the feelings of his patients, and to the practice of cotemporary phyſicians, that Dr. Sydenham

Sydenham was forced to adopt ſweating as a ſubſtitute for bleeding in the plague, and to uſe it very ſparingly in the rheumatiſm. I have reaſon to lament his having accommodated this favourite remedy to ignorance or fear in a ſingle diſeaſe. Had he perſiſted in the uſe of it, he would indeed have "bleſſed mankind, and reſcued me."

We are ſometimes told by the terroriſts in medicine, that the Indians cure their inflammatory fevers without bleeding. To relieve myſelf from the diſtreſs and obloquy to which my uſe of this remedy expoſed me, I have carefully ſought for, and examined their remedies for inflammatory fever with a ſincere deſire to adopt them; but my inquiries have ſatisfied me, that they are not only wholly diſproportioned to the habits of civilized life, but that they are far leſs ſucceſsful than blood-letting even among themſelves. With the ſame wiſh to avoid a painful conflict with the fears and prejudices of my patients, I have preſcribed all the remedies which are ſet down under the firſt head of the ſyllabus, as ſubſtitutes for bleeding, but I am ſorry to add, without effect. However uſeful they may be as auxiliaries to blood-letting, they are all feeble without it, when uſed to cure a fever of violent inflammatory action.

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In contemplating the prejudices againſt blood-letting which prevail ſo generally in our country, I have been led to aſcribe them to a cauſe wholly political. We are deſcended chiefly from Great Britain, and have been for many years under the influence of Engliſh habits upon all ſubjects. Some of theſe habits, as far as they relate to government, have been partly changed; but in dreſs, arts, manufactures, manners, and ſcience, we are ſtill governed by our early aſſociations. Britain and France have been for many centuries hereditary enemies. The hoſtility of the former to the latter nation, extends to every thing that belongs to their character. It diſcovers itſelf, in an eminent degree, in diet and medicine. Do the French love ſoups? the Engliſh prefer ſolid fleſh. Do the French love their meats well cooked? the Engliſh prefer their meats but half roaſted. Do the French ſip coffee after dinner? the Engliſh ſpend their afternoons in drinking Port and Madeira wines. Do the French phyſicians preſcribe purges and glyſters to cleanſe the bowels? the Engliſh phyſicians preſcribe vomits for the ſame purpoſe. Above all, do the French phyſicians adviſe bleeding in fevers? the Engliſh phyſicians forbid it, in moſt fevers, and ſubſtitute ſweating in the room of it. Here then we diſcover the ſource of the prejudices and errors of our countrymen, upon the ſubject of blood-letting. They are of Britiſh origin.

origin. They have been inculcated upon us in Britiſh univerſities, and in Britiſh books; and they accord, as illy with our climate, and ſtate of ſociety, as the Dutch foot ſtoves did, with the temperate climate of the Cape of Good Hope.*

It is probable the bad conſequences which have followed the indiſcrimate, uſe of the lancet in France, and ſome other countries, may have contributed in ſome degree to create the prejudices againſt it, which are entertained by the phyſicians in Great Britain. Bleeding like opium has loſt its cha-

* I have frequently been ſurprized in viſiting Engliſh patients, to hear them ſay, when I have preſcribed bleeding, that their phyſicians in England, had charged them never to be bled. This advice excluded all regard to the changes which climate, diet, new employments, and age might induce upon the ſyſtem. I am diſpoſed to believe that many lives are loſt, and numerous chronic diſeaſes created in Great Britain by the neglect of bleeding in fevers. My former pupil Dr. Fiſher in a letter from the Univerſity of Edinburgh, dated in the Winter of 1795, aſſures me that he had cured ſeveral of his fellow ſtudents of fevers (contrary to general prejudice) by early bleeding, in as eaſy and ſummary a way as he had been accuſtomed to ſee them cured in Philadelphia, by the uſe of the ſame remedy. Dr. Gordon of Scotland, and ſeveral other phyſicians in Great Britain have lately revived the lancet, and applied it with great judgment, and ſucceſs to the cure of fevers.

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racter in many cases by being prescribed for the *name* of a disease. It is still used, Mr. Townsend tells us, in this empirical way in Spain, where a physician, when sent for to a patient, orders him to be bled before he visits him. The late just theory of the manner in which opium acts upon the body, has restrained its mischief, and added greatly to its usefulness. In like manner, may we not hope that just theories of diseases, and proper ideas of the manner in which bleeding acts in curing them, will prevent a relapse into the evils which formerly accompanied this remedy, and render it a great and universal blessing to mankind?

I have great pleasure in acknowledging, that the establishment and defence of blood-letting has not been committed to me alone, in the city of Philadelphia. A number of our physicians, highly respectable for talents and knowledge, have adopted this invaluable remedy, and have used it with a success which has rendered their practice reputable to themselves, and beneficial to the public. The superior success of the friends of blood-letting in recovering patients, is acknowledged by all ranks of citizens; but they have been taught by some of the physicians of the city to believe, that this success does not extend to malignant and dangerous diseases. For example. These gentlemen say the yellow fevers which

which we cure by copious blood-letting are common remittents or intermittents; and that the manias, the internal dropſies of the brain, and the pulmonary conſumptions which we prevent, or cure, by the ſame remedy, are either tranſient derangements of mind from trifling fevers, or common head achs, or colds. But error and calumny in this, as in many other caſes, refute themſelves. It is well known that all thoſe diſeaſes have prevailed for ſeveral years in our city, and that moſt of our phyſicians have had their uſual proportion of patients in them. It is ſcarcely poſſible that we ſhould maintain our proportion of buſineſs, and not meet with the ſame number of caſes of thoſe diſeaſes as our brethren. We do meet with them, and we prevent their mortality, in a great degree, by copious or frequent blood-letting.

From the influence which this detraction from the merit of bleeding has upon its ſucceſs, we are forced to lament, that the greateſt poſſible benefits will never be derived from it, until the ſame uniformity of opinion and practice obtain with reſpect to its uſe, which prevails with reſpect to the uſe of pure air and cool drinks in fevers.

How long error, ignorance, prejudice, and intereſt, upon the ſubject of blood-lettiug, ſhall con-

tinue to render fevers one of the principal outlets of human life, I know not; but their influence cannot laſt always. Perhaps the bleſſings of ſpeedy health, long life, and more univerſal population, which are inſured in a great degree by the uſe of this remedy, may be reſerved by heaven for a more virtuous and enlightened race of men, than thoſe who compoſe the preſent inhabitants of our globe.

I ſhall conclude this work by a reflection which has been ſuggeſted by ſome of the preceding pages.

The preſent is an eventful æra in human affairs. Our world appears to be upon the eve of a great and univerſal revolution. This revolution, I believe, will ultimately be in favour of human happineſs. I do not found my belief of a change for the better, in the condition of mankind, upon the preſent ſtate of things; for every view we can take of them, whether it be directed to morals, religion, or government, exhibits the reverſe of ſuch a change. I believe in the rapid approach of a new order of things, from the coincidence of preſent events with the predictions contained in the Old and New Teſtaments. Theſe predictions are now accompliſhing by natural means. Events, eſſential to each other, have lately taken place, as if by concert, in different nations; and truths, eſſential to thoſe events, have been

been discovered or revived in different parts of the world. Thus, in a former age, the discovery of the art of printing was connected with the revival of letters, and a change in the moral and religious state of Europe. Thus, too, the application of the loadstone to the purpose of navigation, immediately preceded the discovery and settlement of America. One of the predictions alluded to in the Old Testament is, that agriculture, civilization, peace, and just government shall be introduced into the eastern countries, and of course, that an immense increase of the human species shall be effected by their influence, in that part of the globe. To this delightful change in the state of the eastern part of the world, there exists but one natural obstacle; and that is, the plague and other malignant fevers still continue to depopulate whole cities and nations, thereby often producing every species of public and private misery. The extent of this misery may easily be conceived of, by the recital of a single and recent event. In the year 1773 one of those malignant fevers destroyed 275,000 people in Bassorah, amounting to seven-eighths of the inhabitants of that city. To obviate the objection to the fulfilment of ancient prophecy, from the prevalence of malignant and destructive fevers in the east, it will only be necessary to attend to what has been said by Dr. Hartley, upon the propagation of Christianity throughout the world by

natural means. "Mankind (fays this enlightened philofopher and Chriftian) feem to have it in their power to obtain fuch qualifications in a natural way, as, by being conferred upon the Apoftles in a fupernatural one, were the principal means of their fuccefs in the firft propagation of the Gofpel.

"Thus, as the Apoftles had the power of healing miraculoufly, future miffionaries may, in a fhort time, accompliſh themfelves with the knowledge of all the chief practical rules of medicine. This art is wonderfully fimplified of late years, and is improving every day in fimplicity and efficacy. And it may be hoped, that a few theoretical pofitions, well afcertained, with a moderate experience, may enable the young practitioner to proceed to a conſiderable variety of cafes with fafety and fuccefs," *

What Dr. Hartley preconceived with refpect to diſeaſes in general, has, we hope, been realized with refpect to malignant fevers. If we may judge from the fuccefs which has lately attended the treatment of one of them in the cities of Baltimore and Philadelphia, we may fafely aſſert, that no one of them is incurable. It will not be neceſſary to ſend men, educated in colleges, into the Aſiatic countries to

* Obſervations on Man, Propoſition clxxxiii. p. 378.

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cure their peſtilential diſeaſes. Men, and even women, may be employed for that purpoſe, who have not perverted their reaſon by a ſervile attachment to any ſyſtem of medicine. It will be ſufficient for our miſſionaries to know, that a powerful epidemic chaſes away, or mixes with all other diſeaſes, to be acquainted with the different ſtates of the pulſe, to be able to open a vein, to adminiſter a few ſtrong doſes of purging phyſic, and to gratify the calls of nature in their patients for cold water and cool air.

I enjoy, in the proſpect of theſe events, a conſolation which ſurpaſſes, beyond calculation, all the diſtreſs and pain I have felt from my unſucceſsful attempts to introduce the remedies for malignant fevers into general uſe among the citizens of Philadelphia; for the men who are to live an hundred years hence, and in foreign countries, ſhould be conſidered as equally fellow citizens with thoſe who are our coevals, and who live and die in the ſame country with us.

THE END.

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